Smithsonian

JULY 1997

Building Towers To the Sky

[PAGE 44]

Just because

you buy a minivan

doesn't mean

you have to

lose your

identity.

Hello? Hello out there? It's no fun being lost in the crowd, shuttling along with a herd of anonymous, unenlightened minivans. Which has much to do with why we've created the Odyssey. A minivan that recognizes you as the exceptionally savvy, spirited, unique, talented and humble individual that you are.

This is gray. Gray is neither black nor white. Neither here nor there. Our advice? Avoid gray, both in your life and in your choice of minivan.

The Odyssey still does the kinds of things that regular minivans do. Like move people. And things. People and things. But it accomplishes these feats with a bit of personality and smarts.

First, it doesn't look like your typical minivan. The Odyssey strikes more of a sleek, sophisticated silhouette than those clunky-looking "Mommy Mobiles" out there. In fact, given its streamlined

*7-passenger seating available on LX model only. EX model with accessory roof rack shown. ©1996 American Honda Motor Co., Inc.

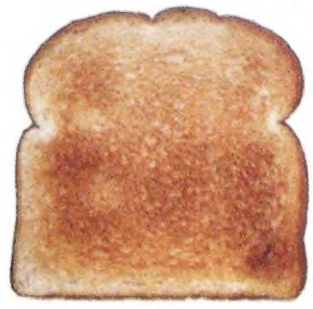
shape, it may come as somewhat of a surprise that it seats up to seven adults comfortably.*

Like the car you're driving now, the Odyssey has four doors for easy comings and goings. (We figured if you wanted the daily workout of a heavy sliding door, you'd go to the gym.)

Although you may have been told you look like someone on a sitcom, there's only one of you in this world. Something that we, and the Odyssey, respect.

When you step into the Odyssey, you don't feel like you're climbing into the cab of a truck. The step-in height is low to the ground. Go for a spin and you'll find handling to be tight. Starts and stops, crisp. On the whole, it conducts itself with remarkable agility.

The rear seat is an engineering wonder. It folds away into the floor in just a matter of seconds. Allowing you to effortlessly go from bringing home an antique dresser to taking the gang out to dinner.



Few can agree what milquetoast really looks like. Its meaning, however, as something bland or ineffectual, is not up for debate. You can avoid a milquetoast existence through independent thought, assertive action and/or an Odyssey.

Why settle for the life of a wallflower when you can get out there and drive something with a spirited sense of self? Call 1-800-33-HONDA, ext. 178, for a brochure. Or visit us at www.honda.com.

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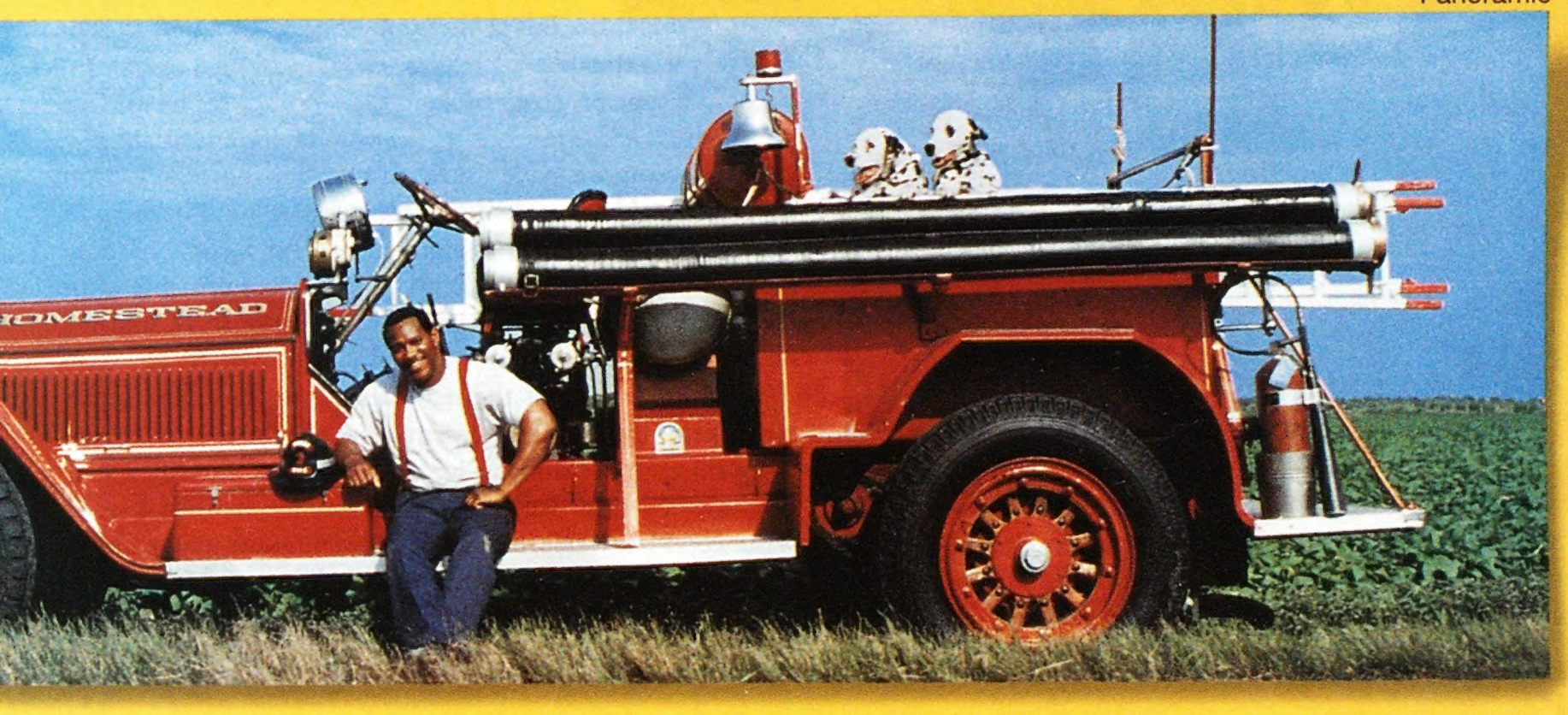

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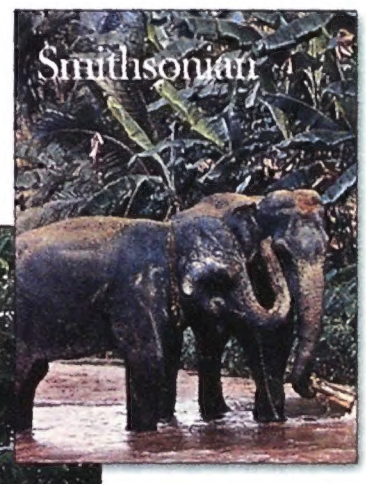
EDITOR'S NOTE

A New Look for An Old Friend

BY DON MOSER

WHEN SMITHSONIAN MAGAZINE STARTED 27 YEARS ago, its appearance was set by the late Bradbury Thompson, a graphic designer of legendary stature. Thompson taught at Yale for four decades, influencing a whole generation of designers; he designed or redesigned 35 magazines and served as art director of others; he created some 90 postage stamps and a lectern Bible. Thompson believed in a reader-friendly design, elegant typography, and restraint—he was not one to let art direction overpower the words and pictures. With minor variations, SMITHSONIAN has stuck to Thompson's original plan since the very first issue—until now.

We do not make changes lightly here. Indeed, SMITHSONIAN was probably the last large magazine in the country to have its type set on a Linotype machine (our typesetter kept six of those glorious antiques just for us, so that when one of them broke down, which happened quite often, the operator could move on to another without missing a comma). But you will see a change as you go through this issue.



The design team takes a break: designers Don Morris (seated at right), Josh Klenert (behind him) and Jennifer Starr, with Picture Editor Edgar Rich (standing) and Editor Don Moser. Inset: the first issue of the magazine, April 1970, set the tone for 27 years.

Why would we tamper with something that worked so well for so long? There are a number of reasons. Although SMITHSONIAN hasn't changed much over the years, it has changed some: a little in terms of subject matter, a bit more in terms of treatment. Eclectic from the beginning, it's probably even more eclectic today. Under the original design we had only a couple of variations for presenting headlines, and it came to seem inappropriate to have similar-looking headlines for a very serious article on nuclear waste disposal and a lighthearted piece on restoring old pickup trucks. We wanted a broader range of typography that would bring out the flavor of an individual story—be it art, science, history or simply fun—and would allow the voice of the writer to come through with more immediacy. We wanted a design that would allow for more flexibility in the presentation of pictures. We wanted to more clearly set off captions from running text. And frankly, we felt we were getting a little lazy—a little too comfortable with our way of doing things. And the computer, that infernal, wonderful machine, was allowing us to experiment with presentations in a way that deadlines would have made impossible with the technology that existed just a few years ago.

But at the same time we wanted to stay true to the principles of reader friendliness and restraint—no purple type on green backgrounds, no bizarre treatments in which art direction gets in the way of communication.

The person we have asked to take on the task is Don Morris, a highly respected graphic designer who believes in those same principles. His aim has been to create a friendly environment—in his words, to "create a comfortable armchair for the reader." This issue bears his signature, and we like it very much.

We also know that the new design, which offers much more flexibility in the presentation of stories, will make some things more difficult for us. It is easier to write a sonnet, with its strict rules of rhyme and meter, than it is to write good free verse, and at the beginning we may stumble from time to time. But the exercise will be good for us.

We hope that you will like SMITHSONIAN'S new look. We'll be glad to hear your comments.

LESS THAN A FOOT TALL, YET LOOKED UP TO BY SO MANY.

The Bose Acoustic Wave® music system.

The Bose® Acoustic Wave® music system is no bigger than a briefcase. Yet the sound it produces has commanded the respect of more than a few members of the audio press, not to mention thousands of music lovers. Once you hear it, we think you'll know why.

The system is the result of a 14-year effort by Bose to produce rich, natural, high-fidelity sound from a simple, compact unit. And at its core is a unique speaker technology: the acoustic waveguide, which won the prestigious "Invention of the Year" award. This patented, seven-foot waveguide speaker gives instruments and voices added clarity, makes subtle nuances come alive, and creates a full, rich bass.

"...One sexy unit that delivers a very big sound..." Spin

We believe the result is simply the most lifelike sound reproduction available in a unit this size. Sound that lets you hear your favorite music the way it was really *meant* to be heard. And with recent improvements, the system sounds more lifelike than ever — producing even richer, fuller, and clearer sound.

The system includes a compact disc player, an AM/FM radio, built-in speakers, and a convenient, credit card-sized remote control. All in one sleek, compact unit measuring just 10.5″H × 18″W × 6.5″D. And because it's so easily transportable, you can now enjoy full, high-fidelity sound almost anywhere.

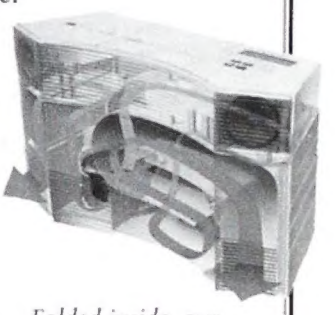
"...Possibly the best-reproduced sound many people have ever heard..." Stereo Review

Unwind with rich Bose sound as you relax in your living room. Take the system out on the porch, plug it in, and invite some friends over. Or bring it to the office and enjoy the same component-quality sound you love hearing at home.

The Acoustic Wave® music system is available directly from Bose. To learn more, call 1-800-898-BOSE, ext. A776, and speak with a friendly Bose representative. And find out how you can try the system out in your home. If you aren't completely satisfied, simply return it for a full refund of the purchase price.

"...The least intimidating quality sound system ever developed..." Chicago Tribune

Call today or return the coupon below. And get ready to give the Acoustic Wave® music system some rave reviews of your own.



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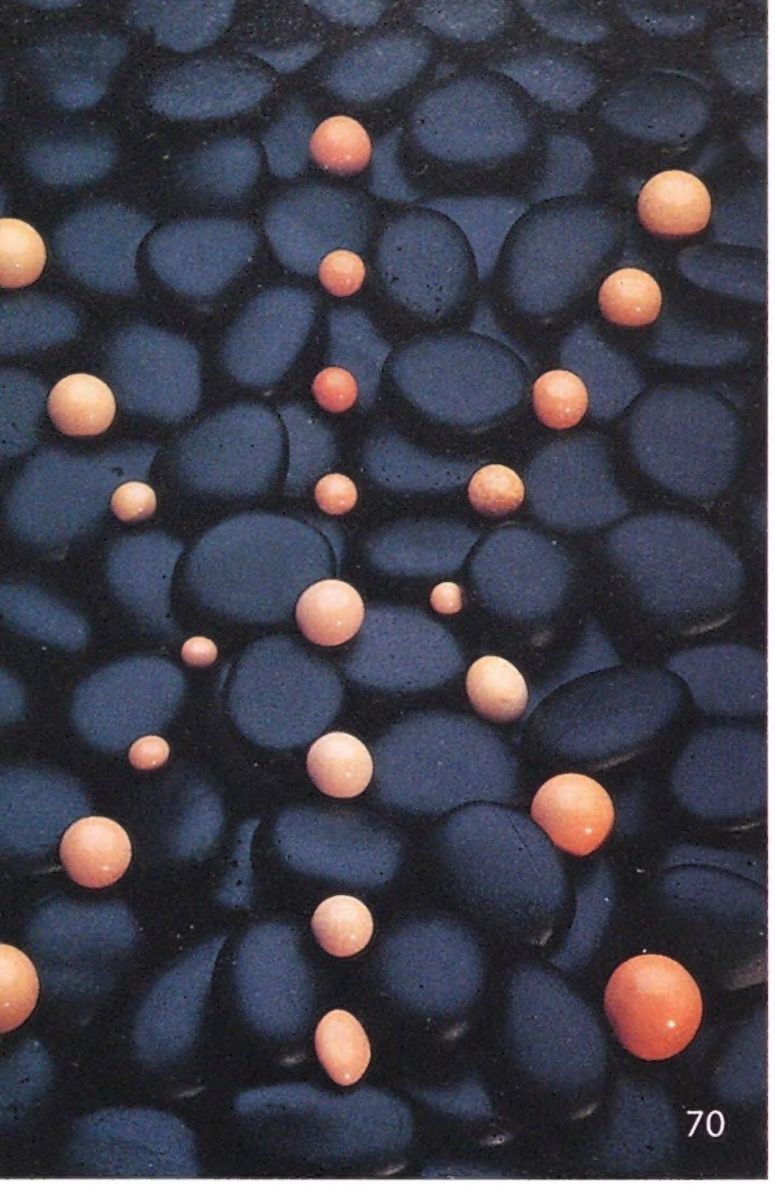

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SMITHSONIAN

departments

JULY 1997 ♜ VOLUME 28, NUMBER 4

Cover With equal parts courage and caution, Hector Bermea mounts a 625-foot two-way-radio tower in Tuxedo, Texas, to spend an evening doing routine maintenance: changing lights, replacing hardware and securing transmission lines loosened in storms.
PHOTOGRAPH BY LAYNE KENNEDY

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When The Going Gets Tough, The Tough Get Comfortable.

The 1997 Mercury Mountaineer.

The way we see it, you face enough adversity in this world. You might as well be comfortable in the process. Mercury Mountaineer gives you both comfort and capability.

So, now when things get tough, you've got available hassle-free full-time all-wheel drive. Standard features include a powerful V-8 engine, 4-wheel disc brakes with ABS, and an electronic automatic transmission. Along with extras like a split-fold rear seat, fog lamps and running boards for easy entry.

Best of all, because Mountaineer is a Mercury, it offers a well-appointed interior with more room than the Jeep® Grand Cherokee. As well as Mercury's legendary smooth ride. For a brochure on the comfortable, capable Mountaineer, call 1 800 446-8888.

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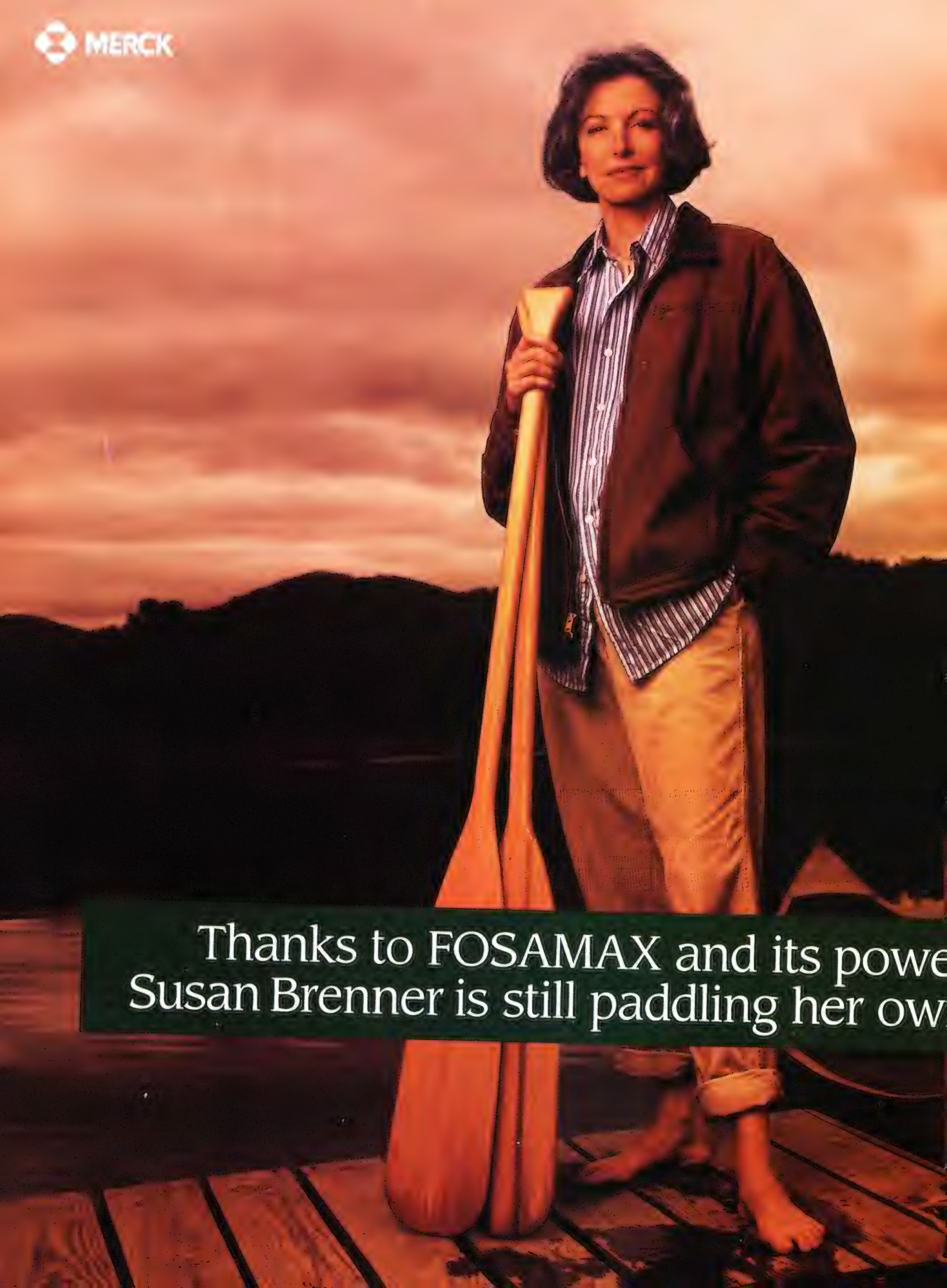
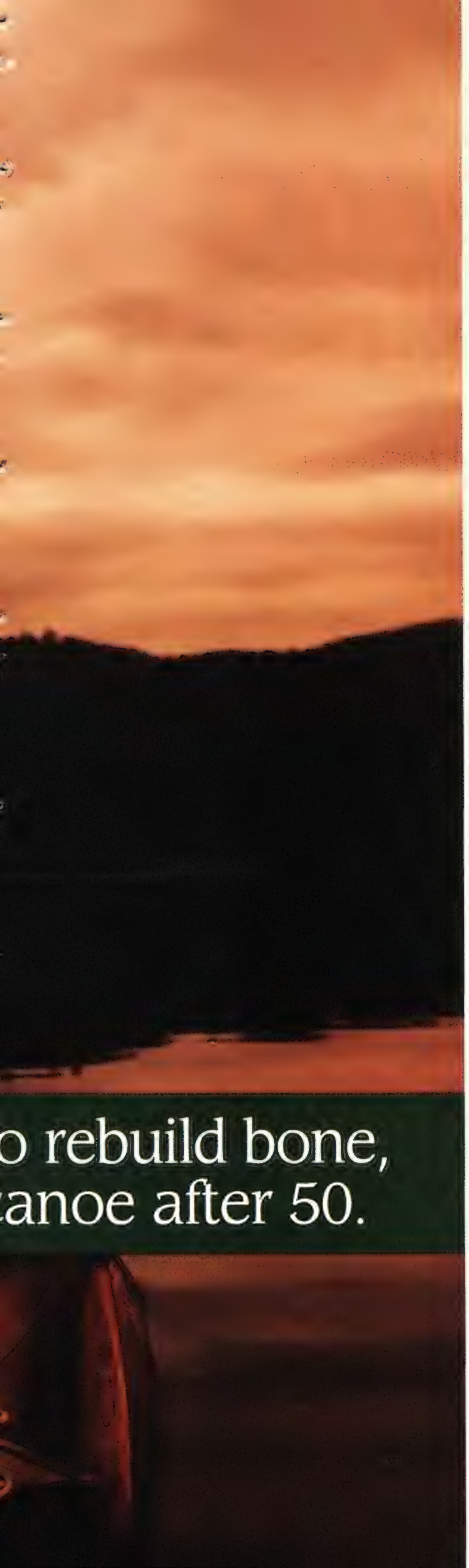


Thanks to FOSAMAX and its powe
Susan Brenner is still paddling her ow



FOSAMAX is the first non-hormonal treatment for postmenopausal osteoporosis proven to rebuild bone. So bones are less likely to fracture.

After menopause, Susan's doctor cautioned her that most women's bones begin to become thinner and weaker at that time. That can lead to osteoporosis, a problem you can have and not know it.

At first, he explained, the disease is silent. Many women find out they have it after breaking a bone.

And he explained that while the calcium Susan's been taking is important for osteoporosis, *calcium can't totally stop bone loss or rebuild bone after menopause.*

Susan's doctor evaluated her condition and the results of a simple, painless test, and determined that she did have osteoporosis.

So he prescribed FOSAMAX. The breakthrough treatment that's completely non-hormonal and can truly rebuild bone in most women.

See your doctor or other healthcare professional. And if it's determined that you do have osteoporosis, ask if FOSAMAX is right for you.

It should be used with caution if you have certain stomach or digestive problems, and should not be used if you have certain disorders of the esophagus (the tube that connects your mouth with your stomach), are unable to stand or sit upright for at least 30 minutes or have severe kidney disease, low levels of calcium in your blood, are allergic to FOSAMAX or are pregnant or nursing.

Some patients may develop severe digestive reactions including irritation, inflammation, or ulceration of the esophagus (see Patient Information for more details). Like all prescription drugs, FOSAMAX may cause side effects. Side effects usually have been mild. They generally have not caused patients to stop taking FOSAMAX.

But if you're like most women with osteoporosis, you'll find that FOSAMAX is a unique and powerful way to help build back the strength of your bones. And your ability to lead the active life you love.

Ask your doctor and call
1 800 214-7005 for information.

The power
to rebuild bone.

FOSAMAX®
(alendronate sodium tablets)

Please see Patient Information on next page and discuss it with your doctor.

971361(6)(004)-FOS

FOSAMAX® (alendronate sodium tablets)
Patient Information about
FOSAMAX® (FOSS-ah-max) for Osteoporosis
Generic name: alendronate sodium (a-LEN-dro-nate)

Please read this information before you start taking FOSAMAX. Also, read the Patient Information leaflet each time you renew your prescription, just in case anything has changed. Remember, the leaflet does not take the place of careful discussions with your doctor. You and your doctor should discuss FOSAMAX when you start taking your medication and at regular checkups.

How should I take FOSAMAX?

These are the important things you must do to help make sure you will benefit from FOSAMAX:

1. **After getting up for the day, swallow your FOSAMAX tablet with a full glass (6-8 oz.) of plain water only.**
   Not mineral water
   Not coffee or tea
   Not juice
2. **After swallowing your FOSAMAX tablet do not lie down — stay fully upright (sitting or standing) for at least 30 minutes and until after your first food of the day. Do not chew or suck on a tablet of FOSAMAX.** This will help the FOSAMAX tablet reach your stomach quickly and help avoid irritation of your esophagus (the tube that connects your mouth with your stomach).
3. **After swallowing your FOSAMAX tablet, wait at least 30 minutes before taking your first food, beverage, or other medication of the day,** including antacids, calcium supplements and vitamins. FOSAMAX is effective only if taken when your stomach is empty.
4. **Do not take FOSAMAX at bedtime or before getting up for the day.**
5. **If you have difficulty or pain upon swallowing, chest pain, or new or worsening heartburn, stop taking FOSAMAX and call your doctor.**
6. Take FOSAMAX once a day, every day.
7. It is important that you continue taking FOSAMAX for as long as your doctor prescribes it. FOSAMAX can treat your osteoporosis or help you from getting osteoporosis only if you continue to take it.
8. If you miss a dose do not take it later in the day. Continue your usual schedule of 1 tablet once a day the next morning.

What is FOSAMAX?

FOSAMAX is for the treatment or prevention of osteoporosis (thinning of bone) in women after menopause. It reduces the chance of having a hip, wrist or spinal fracture. You will find more information about osteoporosis at the end of the leaflet.

How does FOSAMAX work?

FOSAMAX works by:

- Reducing the activity of the cells that cause bone loss
- Decreasing the faster rate of bone loss that occurs after menopause
- Increasing the amount of bone in most patients

These effects are seen as soon as three months after therapy with FOSAMAX has begun. These effects continue as long as you keep taking FOSAMAX. The density of bone is maintained or increased and the bone is less likely to fracture. Thus, FOSAMAX prevents or reverses the progression of osteoporosis.

Who should not take FOSAMAX?

Patients with:

- Certain disorders of the esophagus (the tube that connects your mouth with your stomach)
- Inability to stand or sit upright for at least 30 minutes
- Low levels of calcium in their blood
- Severe kidney disease
- Allergy to FOSAMAX

Patients who are:

- Pregnant or Nursing

FOSAMAX is for use by women after menopause. If you are pregnant or nursing, you should not be taking FOSAMAX. Talk to your doctor.

What other medical problems should I discuss with my doctor?

Talk to your doctor about any:

- Problems with swallowing
- Stomach or digestive problems
- Other medical problems you have or have had in the past

What are the possible side effects of FOSAMAX?

Some patients may develop severe digestive reactions including irritation, inflammation or ulceration (occasionally with bleeding) of the esophagus (the tube that connects your mouth with your stomach). These reactions can cause chest pain, heartburn or difficulty or pain upon swallowing. This may occur especially if patients do not drink a full glass of water with FOSAMAX® (alendronate sodium tablets) and/or if they lie down in less than 30 minutes and before their first food of the day. Esophageal reactions may worsen if patients continue to take FOSAMAX after developing symptoms suggesting irritation of the esophagus.

Like all prescription drugs, FOSAMAX may cause side effects. Side effects usually have been mild. They generally have not caused patients to stop taking FOSAMAX. Some patients treated with FOSAMAX experienced abdominal (stomach) pain. This is the most commonly reported side effect. Less frequently reported side effects are:

Nausea, heartburn, irritation or pain of the esophagus (the tube that connects your mouth with your stomach), vomiting, difficulty swallowing, a full or bloated feeling in the stomach, constipation, diarrhea and gas.

Rarely stomach or other peptic ulcers (some severe) have occurred.

Bone, muscle or joint pain, headache, or an altered sense of taste were also experienced by some patients. Rarely, a rash has occurred. Allergic reactions such as hives or, rarely, swelling of the face, lips, tongue and/or throat which may cause difficulty in breathing or swallowing have also been reported. Mouth ulcers have occurred when the tablet was chewed or dissolved in the mouth.

Anytime you have a medical problem you think may be related to FOSAMAX, talk to your doctor.

What should I know about osteoporosis?

Normally your bones are being rebuilt all the time. First, old bone is removed (resorbed). Then a similar amount of new bone is formed. This balanced process keeps your skeleton healthy and strong.

Osteoporosis is a thinning and weakening of the bones. It is common in women after menopause. Menopause happens when the ovaries stop producing the female hormone, estrogen, or are removed (which may occur, for example, at the time of a hysterectomy). After menopause, bone is removed faster than it is formed, so bone loss occurs and bones become weaker. Therefore, maintaining bone mass is important to keep your bones healthy.

At the start osteoporosis usually has no symptoms, but it can result in fractures (broken bones). Fractures usually cause pain. Fractures of the bones of the spine may not be painful, but over time they cause height loss. Eventually the spine becomes curved and the body becomes bent over. Fractures may happen during normal, everyday activity, such as lifting, or from minor injury that would normally not cause bone to break. Fractures most often occur at the hip, spine, or wrist. This can lead to pain, severe disability, or loss of mobility.

How can osteoporosis in postmenopausal women be treated or prevented?

- **Medication.** Your doctor has prescribed FOSAMAX. FOSAMAX acts specifically on your bones. FOSAMAX is not a hormone and does not have the benefits and risks of estrogen (hormone replacement therapy) elsewhere in your body. Either FOSAMAX or estrogen may be used to treat or prevent osteoporosis. You may want to talk to your doctor about these options.
- **Lifestyle changes.** In addition to FOSAMAX, your doctor may recommend one or more of the following lifestyle changes:
  - **Stop smoking.** Smoking appears to increase the risk of osteoporosis.
  - **Reduce the use of alcohol.** Too much alcohol appears to increase the risk of osteoporosis and injuries that may cause fractures.
  - **Exercise regularly.** Like muscles, bones need exercise to stay strong and healthy. Exercise must be safe to prevent injuries including fractures. You should consult your doctor before you begin any exercise program.
  - **Eat a balanced diet.** Adequate dietary calcium is important to patients with osteoporosis. Your doctor can advise you whether you need to change your diet or take any dietary supplements such as calcium or vitamin D.

This medication is prescribed for a particular condition. Do not use it for another condition or give the drug to others. Keep FOSAMAX and all medicines out of the reach of children. If you suspect that more than the prescribed dose of this medicine has been taken, drink a full glass of milk and contact your local poison control center or emergency room immediately. Do not induce vomiting. Do not lie down.

This leaflet provides a summary of information about FOSAMAX. If you have any questions or concerns about either FOSAMAX or osteoporosis, talk to your doctor. In addition, talk to your pharmacist or other healthcare provider.

MERCK & CO., INC.
Issued April 1997
West Point, PA 19486, USA

FOSAMAX®
(alendronate sodium tablets)

MERCK

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The Wonder of Iron-7

Iron Particles Store Information

The ability of ferromagnetic substances to remember directions of a magnetic field mean they can be used to store information. The stronger the coercive force, the more strongly a material retains its magnetism. A stronger coercive force allows information to be stored at higher densities. Ferromagnetic substances, iron, iron alloys, and iron compounds, are divided into smaller regions known as magnetic domains with each domain having a different orientation.

Fine particles of a ferromagnetic substance, below a certain size, will have only a single magnetic domain. These particles are called single-domain particles. Some kind of bacteria, dolphins, and homing pigeons have single-domain particles within their bodies, which help them sense direction. Man uses these particles by coating magnetic disks, magnetic tape, magnetic cards, and other magnetic memory devices with needle-shaped single-domain particles.

Magnetic storage was first used in 1898 by the Danish scientist V. Poulsen to make a magnetic sound recorder. The recording medium was originally steel wires or steel belts running at several meters per second, but nowadays, we generally used needle-shaped particles of iron oxide (γ Fe_2O_3) or iron alloys (Fe-Co-Ni).

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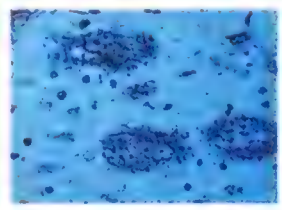
He's working to help Alzheimer's patients remember, and that's helping families hope.

Axel Unterbeck
pharmaceutical company researcher

"When I was a young student, people used to think that memory loss and dementia were a normal part of aging. Today we know that in many cases, the real cause is Alzheimer's disease. As a pharmaceutical company researcher, I am committed to finding ways of treating this disease."

"Currently, there are about 4 million people in the United States with Alzheimer's disease. Unfortunately, this number will dramatically increase as our population ages. My company is searching for treatments that might slow down, halt or maybe even reverse the progression of Alzheimer's."



Brain cells from an Alzheimer's patient.

"We think Alzheimer's disease has several different causes," says Axel Unterbeck, a pharmaceutical company researcher. "Some forms are genetic while others might involve additional factors. Because it affects memory and learning, it's one of the most complex diseases we know of." Unterbeck and his team of researchers are working on genes that are linked to Alzheimer's disease. "Four genes have been identified so far," Unterbeck says. "These gene discoveries give us, for the first time, a realistic hope to find a cure."

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SMITHSONIAN

PERSPECTIVES

A Treasury of Archives

THOUGH SELDOM SEEN BY THE PUBLIC, THE SMITHSONIAN'S VAST REPOSITORIES ARE VITAL TO THE INSTITUTION

More than 22 million people visited the Smithsonian last year. Most of these visitors moved from museum to museum and were captivated by the riches of our exhibitions and collections. A much smaller number, however, made use of collections that cannot be seen. These, too, are treasures and are so integral to the work of the Institution that without them our mission would be seriously impaired.

I refer to the archives and special collections of the Institution. Though they are mainly the preserve of the scholarly researcher and are, therefore, less well known than our object collections, our archives serve the broader public more often than you might think. This space doesn't permit more than a capsule view of our vast archives, but let me introduce you to a few of these extensive and varied resources.

The Office of Smithsonian Institution Archives thoroughly documents the 150-year history of James Smithson's legacy. With correspondence, photographs, oral histories, architectural drawings, microfilm, audiotapes and video histories, it details the growth of the Smithsonian from a grand hope to a national treasure. In the process, it also sheds light on the many disciplines found within our museums, research institutes and offices. The archive is used by staff and visiting scholars, but increasingly it receives e-mail requests from the general public.

The oldest Smithsonian repository is the National Anthropological Archives (NAA), established in 1879, and later incorporated into the National Museum of Natural History. The NAA holds special value for Native Americans. For instance, an Apache delegation recently spent time at the archive combing through hundreds of 19th-century photographs to study their cultural heritage.

Like the NAA, the Human Studies Film Archives, also located at Natural History, is of special interest to Native peoples. This collection contains films and related documentation produced or gathered by ethnographic filmmakers. Truly international in scope, its holdings include films shot in Brazil, in Haiti and on the Gold Coast of Africa, and footage of American Indian tribes dating from 1908.

Another collection, the Archives of American Art (AAA), was an independent entity until its absorption into the Smithsonian in 1970. Its founding mission has been to document the visual arts in America. The largest repository of its kind in the world, the AAA is a rich resource for scholars and art enthusiasts of all backgrounds, including the general public. Recently one visitor spent several days poring over records of the New England firm that designed and installed the stained-glass windows in his local church.

Users of the National Air and Space Archives are equally diverse. The staff handles reference questions from scholars, as well as numerous requests from airplane enthusiasts, aircraft restorers and schoolchildren. Of major interest are the 1.5 million photographs and 2 million technical drawings that permit the Air and Space Archives to boast that it possesses the specifications for most of the planes manufactured in the United States prior to World War II.

Archives Center in the National Museum of American History was created in 1982 to add a documentary dimension to the museum's mission. Consisting of personal papers, business records, advertising materials, historical photographs and audiovisual collections, Archives Center is a support to and an extension of the museum's curatorial programs. The Duke Ellington Collection is a case in point. The material collection of bandstands, articles of clothing and representative items from Ellington's life is complemented by the archival collection of musical scores, personal correspondence and business records. This collection also supports a range of public programs, from historic re-creations of Ellington performances to education kits for schoolchildren.

The Smithsonian's Horticulture Services Division may seem an unlikely location for papers and manuscripts, but there one finds the Archives of American Gardens. This collection includes 60,000 photographs documenting historic and contemporary American gardens, as well as letters, plans, maps, brochures and other items documenting garden development in the United States. Used by historians and other scholars, the archive is also a resource for preservationists, landscape designers and garden enthusiasts.

There are many more special resources at the Smithsonian; all give depth and meaning to the objects in our collections. They validate, verify and provide contextual understanding of the art and artifacts that are the domain of curators. They contain the raw material and evidence of our complex past. Just as the Office of Smithsonian Institution Archives helps me understand the history of this diverse organization, other repositories also offer their users a key—to knowledge, to understanding, to intellectual reward.

I. MICHAEL HEYMAN, SECRETARY

"Luckily, being alone doesn't spook me."

Steve Fossett

For nearly a week, Steve Fossett enthralled the world as he attempted to become the first person to circle the globe nonstop by balloon. Taking off from St. Louis, Fossett, aboard *Solo Spirit*, ascended to some 20,000 feet and rode the jet stream eastward across the Atlantic and North Africa, before diminishing fuel forced him down deep inside India.

Although he didn't complete his historic

quest, the mission was hardly a failure. Traveling in an unpressurized cabin where the average temperature was close to zero, and sleeping no more than two hours a night, Fossett established new world marks for the longest balloon flight, in both distance (10,360.61 statute miles) and duration (6 days, 2 hours and 44 minutes).

Fossett knows he has to make a few crucial adjustments if he is going to achieve the last great goal in aviation history. "I have to find a way to increase the fuel supply, improve the heating system, and reconfigure the communications process so that I can get more sleep," he says. But, as for his chosen timepiece, he sees no room for improvement. "My GMT-Master II functioned flawlessly," says Fossett.

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MONUMENTS

THE STATUE OF FRANKLIN DELANO Roosevelt on the May cover of your great magazine will not do. It is the face of a depressed, discouraged pessimist. Even in the darkest days of the Great Depression and the worst times of World War II, FDR exuded an aura of confidence and hope that is nowhere to be found in that sculpture.

Norman M. Scott, Jr.
San Francisco, California

WHEN I TORE OFF THE PROTECTIVE cover from the May issue and saw Franklin Delano Roosevelt's face, my heart leapt. Sculptor Neil Estern has captured the pain and anguish FDR felt for us during the Depression and his worry for us during WWII.

Ida Martin
Fortuna, California

THE SCULPTURE OF FDR IS A MONstrosity. His skin texture suggests he has fallen victim to a dread disease. How much did the sculptor receive for producing the effect of a dust storm on wet clay?

Russell E. Simmons
Raton, New Mexico

I CAN UNDERSTAND THE RELUCTANCE of the antitobacco activists to have FDR portrayed enjoying a cigarette. But he did, and to practice censorship at this late date is absurd.

Dorothy Koutnik
Dallas, Texas

BY HIDING FDR'S DISABILITY UNDER A cape, some members of his family and the designers of the memorial not only made less of FDR's courage and fortitude, they also took away a positive role model for disabled American children. Roosevelt would have been appalled and his wife would never have let it happen.

Greg Henderson
Nampa, Idaho

NOW THAT THE DISABLED HAVE THRUST their values onto a memorial for a man brought up in an entirely different time, a wheelchair will be added to it with the blessing of some of FDR's grandchildren, regardless of President Roosevelt's efforts to avoid being photographed in one. The new memorial is less of a monument to FDR than a Roosevelt-hater's revenge.

Barbara H. Ambler
Kennett Square, Pennsylvania

FREDERICK HART'S SCULPTURE ADDS nothing to, and possibly detracts from, Maya Lin's original design for the Vietnam Veterans Memorial. The "black gash" is about the people who went to Vietnam and never returned. It memorializes the person rather than the war. Hart's statue added the guns, bullets and other combat gear that make a war a war. It represents what killed the people whose names are etched on the panels. When you visit the memorial, pay close attention to how much time anyone spends observing the Hart statue, and then watch someone search for, find, look at, touch and relate to just one name on a granite slab.

Bob Mackenzie
Vietnam veteran
Brockton, Massachusetts

ENRICO FERORELLI'S PICTURE OF THE *Maine* Memorial on page 107 is a gem of gems. How on earth did he manage to get those pigeons to pose in perfect symmetry? Three possibilities come to mind: he hired a circus act of trained birds; he executed local pigeons, stuffed them and then wired the birds in place; or he set up his camera and then waited for about two and a half years for the birds to land that way.

Jere French
Gulf Breeze, Florida

TAP DANCING

THANK YOU FOR CHIORI SANTIAGO'S meticulously and enthusiastically written article on tap dancing. Your article brought back grand memories of the drum-drumming of a repetitive roll of taps and staccato notes rising up from the floor to produce a thunder never matched then or any time in my life. I was one of those individuals who was stricken with the tap fever and was one of the few dancers who did tap routines on roller skates back in the 1930s. The smells and sounds of practice rooms and backstage theater halls returned to me in a rush.

Barbara Washington
Windsor, Connecticut

ONE TAP DANCER YOUR ARTICLE DID not mention was Clayton "Peg Leg" Bates, who first gained fame in the black revue *Blackbirds of 1928*. For decades he performed in major American and European theaters and clubs. In 1919, when he was 12, Mr. Bates lost his left leg to a conveyor belt at a cotton gin where he was working. His

"She's sort of wrinkled
and scowls a lot.
She hasn't stopped
screaming since
the day she arrived.
The dogs are *terrified*."

uncle made him a wooden peg leg, thus garnering him the nickname. It was then that Mr. Bates began developing his unique style of dancing.

In 1937 and 1938, he gave command performances before King George VI and Queen Elizabeth of England. During the 1950s and 1960s, Mr. Bates danced on the Sunday night program *The Ed Sullivan Show* more than 20 times. In the documentary *The Dancing Man—Peg Leg Bates*, Gregory Hines said, "He would use that peg . . . in the kind of way that drummers were doing, and so he was expressing himself in ways that other tap dancers weren't."

Although he performed at many hotels and country clubs, he was not allowed to stay in them because of segregation. In 1952 he and his wife, Alice, opened the Peg Leg Bates Country Club in the Catskills—the first integrated resort built in the United States.

Stanley Nitzky
Woodstock, New York

THE GIRL ON THE FAR RIGHT OF THE picture of chorus-line tappers from the 1933 film *42nd Street* (page 86) is Ruby Keeler, later Mrs. Al Jolson.

Geo Kortas
Norridge, Illinois

YOUR ARTICLE APTLY NOTED THAT Fred Astaire transformed the "humble buck-and-wing into an art," but Gene Kelly brought that art back to its origins—to the streets. And it is in the streets that dance on film found its truest expression through Mr. Kelly: on roller skates, through Manhattan and in the rain [in *It's Always Fair Weather*, *On the Town* and *Singin' in the Rain*].

Kathy Shanabrook
Arlington, Virginia

RODGERS AND HAMMERSTEIN'S WATERshed musical *Oklahoma!*, with Agnes de Mille's revolutionary choreography, was first produced in 1943, not 1949 as your article stated.

Jonathan B. Abarbanel
Chicago, Illinois

SCRAP METAL

KEVIN KRAJICK'S ARTICLE ON SCRAP metal reminded me of my youth when I lived near Ebbets Field, home of the Brooklyn Dodgers. During WWII (remembered as the era of 16-year-old shortstops, one-armed outfielders and sub-.300 batting champions), either as a patriotic gesture or a means to boost stadium attendance, the Dodgers offered free admission to fans who brought a certain amount of scrap metal to the ballpark. I didn't have the admission fee, and my mother wouldn't part with her cast-iron pots, so I watched a parade of pans, kettles, hubcaps and rusty plumbing parts make their way down Franklin Avenue. A barbershop pole, a mounted truck tire being rolled down the street and two little boys carrying a large, shiny washtub were the eye-openers. I have often wondered how the boys came by that tub, and whether a Brooklyn housewife had her patriotism tested on laundry day.

Meyer L. Block
East Northport, New York

I COLLECT ANTIQUE TRACTORS AND AM fortunate to own a 1917 Rumely OilPull Type "E" tractor that survived the scrap drive of WWII. This 13¼-ton leviathan was used to thresh and pull an 8-12-bottom plow in the early days of mechanical farming. Of the 8,235 manufactured, only about 100 "E" tractors exist today. I read about a man who blew his "E" to pieces with dynamite during WWII. He received $60 for the castings and babbitt metal. The same model, in good condition, currently begins trading at $40,000.

Kevin Johnson
Lone Jack, Missouri

THE SAN FRANCISCO BAY AREA CAN claim one of the earliest recycling enterprises in the United States. So many old, unseaworthy ships came to California during the Gold Rush and were abandoned that an industry to dispose of them cropped up. The best known shipbreaker was Charles Hare, who floated the hulks to South Beach, and with the help of Chinese crews, tore them apart. Contemporaries described the sorting of timbers, iron, copper and cordage into separate piles for sale and reuse.

Martha L. Voght
Bishop, California

YOUR ARTICLE ON SCRAP METAL GAVE the impression that the David J. Joseph Company was failing when it was sold 20 years ago. The company was then, as it is now, vibrant, growing and financially successful. Because then-president David J. Joseph, Jr., had no children following him into the family business, the sale was a means of ensuring the company's continuation.

Stephen W. Wulff
Vice President, Ferrous Division
The David J. Joseph Company
Cincinnati, Ohio

PERSPECTIVES

SECRETARY I. MICHAEL HEYMAN'S BIOGraphy of Paul Garber was a fine tribute to a real American who was dedicated to preserving our history in aviation. I served with Mr. Garber one cold winter during WWII while working on U.S. Navy aviation experiments in the Chesapeake Bay area.

In the late 1980s, I visited the Suitland site during an open house and was amazed to find Paul Garber bent over a table making kites for children. He looked up and, with his warm smile, reminded me how we froze in 1944. Then he pointed to his tie clip: his cherished Navy wings.

Sidney Schrier
Egg Harbor, New Jersey

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Wastewater Problem? Just Plant a Marsh

FOR SOME OF THE TOUGHEST ENVIRONMENTAL CLEANUPS, PLANTS CAN DO IT BETTER AND CHEAPER THAN WE CAN

BY JOHN P. WILEY, JR.

Effluent from Ethel M Chocolates in Henderson, Nevada, is treated here. Microbes in the foreground tanks begin the job; plants in the tanks at the rear finish it.

NO ONE IS SUGGESTING THAT THE plant kingdom isn't doing its fair share. All those leafy creatures are photosynthesizing their virtual hearts out producing the oxygen that keeps the rest of us going. They filter the air, and they prevent erosion by slowing the speed of incoming raindrops and by holding the dirt together with their root systems. Plants provide timber for houses and the furniture that fills them, pulp for paper (a tree died so you could read this column) and flowers for hospital patients. Tens of millions of acres produce the grains that feed our cattle, hogs and chickens.

For ourselves, plants are both sustenance and beauty, in either order. The news is that the plant world can do lots more for us: it can become an industrial partner, one that can clean up our mess.

The concept is known as phytoremediation, *phyto* being the Greek word for plant. Microbes are already being used to clean up such nasty things as oil spills, under the more general category called bioremediation (SMITHSONIAN, April 1993). Now artificial marshes are being planted to further cleanse the effluent from sewage treatment plants or to make the water draining from abandoned mines less lethally acidic. Specially selected species are being planted on land that has been contaminated with one or more heavy metals. Some plants will accumulate the metals—which tend to be very toxic—in their tissue. These may not only solve the problem but may become a cash crop: in the case of zinc and cadmium, the plants harvested from just one acre could be worth several hundred dollars. Still other plants will remove metals from the soil, convert them into gases and release them into the atmosphere (though this presents its own risks).

Metals are not the only contaminants that plants can help clean up. They can accumulate or break down organic (carbon-containing) compounds. Poplars planted in strips will stop plumes of underground water contaminated with petroleum. The trees will also accumulate the hydrocarbons that make up the petroleum, removing them from the ground. Poplars, and a number of other plants, can also break down compounds like TNT (left behind when the Army burns or detonates obsolete munitions) into harmless, inert compounds. There are even plants that will accumulate radioactive nuclides: *Science News* reported last year that sunflowers floating on rafts with their roots dangling in the water are being used to remove cesium 137 and strontium 90 from a pond at Chernobyl. The plants themselves become radioactive waste, which can be handled, and the water is cleansed. It costs $6 or less per thousand gallons of water, far less than the more "advanced" technologies that exist.

In most cases, these processes are more complicated. Suppose, for exam-

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What attracts me most is the idea of turning a messy problem into a garden.

ple, you have a piece of land that is saturated with lead. In normal soil, no plant will take up much of that lead. But if you amend the soil with a substance that will bind to the lead, the resulting compound will be taken up nicely by Indian mustard (*Brassica juncea*). *Environmental Science and Technology* recently reported that on a New Jersey site where batteries once were made, the lead was nearly gone after just one summer of this treatment.

The potential cost savings are attractive. Cleaning dirt on-site can cost $10 to $100 per cubic meter. Taking it off-site to clean can cost three times as much. Tending the plants doing phytoremediation comes to about a nickel a cubic meter. The financial incentive can also lead to environmental largess. New York City has decided to spend nearly $1 billion to protect the Catskill watershed that naturally purifies most of its drinking water. A treatment plant to purify the water would cost $4 billion to $6 billion to build.

This duckweed-covered pond is the result of sewage treatment—and a popular attraction—at a nature center in Cedar Rapids, Iowa.

What attracts me most, however, is the idea of turning a messy problem into a garden. Take acid mine drainage. It contaminates streams from Pennsylvania to Alabama. The process of mining exposes pyrite (fool's gold) to air and water. Iron and sulfur in the mineral are transformed into iron-laden sulfuric acid. The acid then dissolves other metals—such as manganese and aluminum—from the surrounding rock. Water from rainfall and underground streams washes these contaminants into streams, turning them bright orange and red. The acidity is so strong that it kills fish and aquatic vegetation. The coal industry has been spending more than $1 million per day to treat the effluent with alkaline chemicals, such as lime. But the late, lamented Bureau of Mines had a better idea. The bureau began encouraging the planting of artificial wetlands, using primarily the common cattail *Typha latifolia*, in places where the acid drainage would go through them. A typical site costs $20,000 to build. It can reduce cleanup costs by $20,000 to $60,000 a year compared with the industry's usual practices.

Here's my favorite example of plants coming to the rescue. According to the trade journal *Land and Water*, the Indian Creek Nature Center in Cedar Rapids, Iowa, was in a bind. They had planned for an annual attendance of fewer than 10,000 visitors a year and they were getting more than 40,000. The septic system was overloaded. The center is located at the confluence of Indian Creek and the Cedar River, surrounded by flood-prone land, which meant that a conventional leaching field was not possible. They decided to build wetlands instead. An engineering firm donated the services of an engineer who had designed wetland systems for years. Foundations put up the money, the Cedar Rapids Parks Department did the grading, and members of the Cedar Rapids Garden Club volunteered to buy and plant a wetland garden.

The waste stream first goes to a conventional septic system. But then the effluent goes through three basins. The first two are filled with pea gravel. Water does not reach the surface, but wetland plants extend their roots into the dirty water. The combined surface area of the gravel and the root systems of the plants provides a substrate for the bacteria that break down the sewage. The water, now clean, then flows into a third basin, a pond, which has inadvertently become the biggest attraction at the center.

That description is not very inviting. But consider what you would see if you were there. The first basin is planted with cattails and bulrushes. In the second are growing arrow arum, blue and yellow iris, water plantain, cardinal flower, great blue lobelia, ironweed, swamp milkweed, and sweet and marsh blazing-star liatris. In the pond itself are water plantain, arrow arum, sweet flag, marsh marigold, lizard's tail and arrowhead. Along its banks are slender goldenrod, grass-leaved goldenrod, pale purple coneflower, yellow coneflower, sky-blue asters and shrubs. It's really just a sewage treatment plant, and yet I find myself wanting to be there.

Something like that has already happened to me. A few years ago (*Phenomena*, May 1989) I went back to Aruba, the formerly Dutch island off the coast of Venezuela where I had grown up. Years before I lived there, flat ponds had been dug to evaporate seawater for the salt. By 1989, I discovered, those ponds had been turned into a tertiary sewage-treatment system. My friend and I had asked for the hotel closest to a nature center and got what we wanted—the hotel closest to the sewage-treatment plant. Except it was deep green with vegetation (the island is otherwise very arid) and loaded, just loaded, with birds of every kind.

Most of these phytoremediation schemes are still experimental. Yet the idea of using fields of flowers rather than brute-force mechanical methods seems so intuitive, so attractive, that I can't help thinking that in the long run, we will be hearing more about it.

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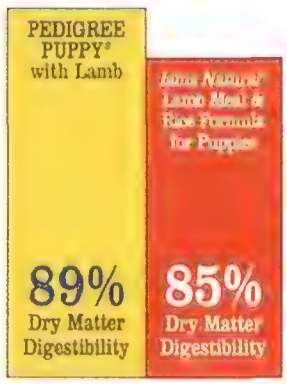
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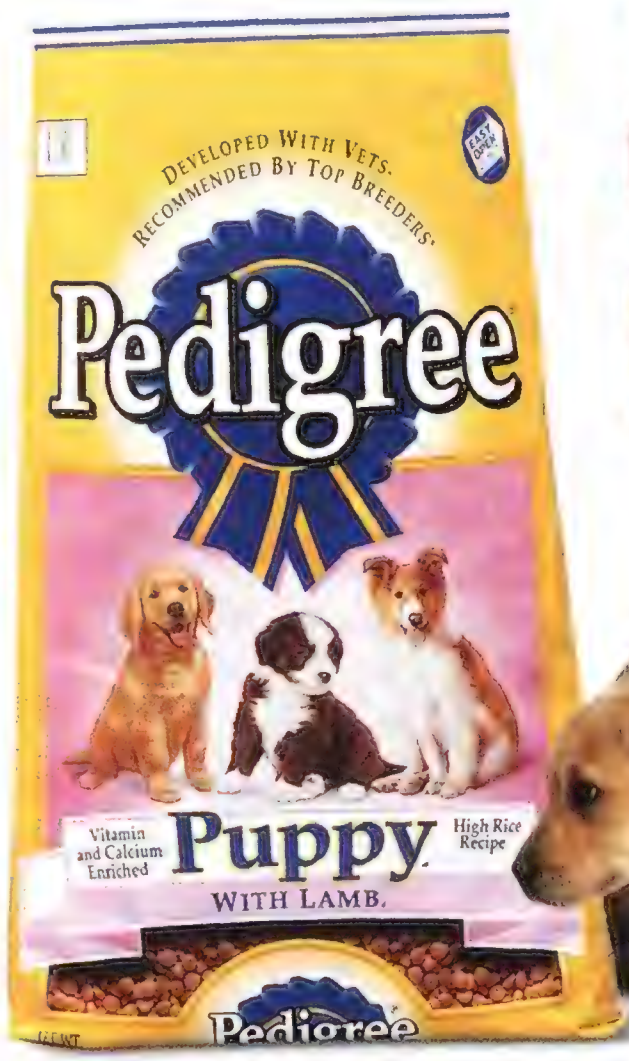

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Art Night on the Mall

SUMMER EVENING TWILIGHT—PERFECT FOR A HIRSHHORN GALLERY TALK AND A STROLL AMONG THE SCULPTURES

BY MICHAEL KERNAN

WALKING PAST THE HIRSHHORN Museum and Sculpture Garden the other day, I heard someone mutter, "Oh, that's where the modern art is," in a way that would make you think she was talking about some low saloon or maybe a jail.

Just a few steps away I could see on the lawn Juan Muñoz's *Conversation Piece*, a bunch of life-size bronze figures whose bottoms are rounded like those naughty punching-bag clowns that come right back up after you knock them down. At first glance, it was funny, and so was the rusted steel sculpture next to it, Tony Cragg's *Subcommittee*, a giant rack of bureaucratic rubber stamps. They looked like a witless chorus huddling together to give their opinions an authority that they lacked as individuals.

This was modern art, all right, and it wasn't so bad. It made me smile. I decided that maybe if people didn't try so hard to understand it, they would get along with it better.

Heading inside, I found Nam June Paik's *Video Flag*, a bank of 70 TV screens whose images form a giant American flag. The computer-driven laser-disk images change every half-second or so to create a manic but wonderful kaleidoscope of American scenes—rotating Miss Liberties, news photographs, Presidential faces that morph incredibly from one to another, and lots more stuff than I could keep track of. What does it mean? Paik, a Korean-born American video artist who has lived in New York for 35 years, simply wanted to give a silent cheer for his adopted country.

I met Sidney Lawrence, who handles public affairs for the Hirshhorn, and he told me that the Hirshhorn, including the Full Circle Café on the plaza, and other nearby Smithsonian buildings (the Sackler and Freer galleries, the National Museum of African Art and the International Gallery in the Ripley Center) are open late on Thursday evenings this summer thanks to the Art Night on the Mall program. The National Museum of Women in the Arts, the Corcoran Gallery and the Phillips Collection are also open late Thursdays, and there are hopes that the idea will spread in future years to other Washington art museums. Museum shops are open, too, and if you haven't seen the Hirshhorn's shop, you're missing a great source of unusual art books, postcards, brightly colored puzzles, games, jewelry and doodads. As part of Art Night, there are gallery talks and films at the Hirshhorn; a show by Latino photographers at the International Center; kinetic sculptures and music at African Art; Asian dance and three magnificent exhibitions of Indian art at the Sackler and the Freer; and, of course, a chance to see all the permanent collections without the usual crowds.

On a shady lawn in the Hirshhorn plaza, a nice place for alfresco dining, the figures of Spanish sculptor Juan Muñoz's *Conversation Piece* have their say.

HIRSHHORN MUSEUM AND SCULPTURE GARDEN, DC

CIVILIZATION AT WORK

"MY OWN THEORY," SAID LAWRENCE, "is that by 5:30 many family groups are ready to call it a day. The kids are get-

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CONTRAINDICATIONS ZYRTEC is contraindicated in those patients with a known hypersensitivity to it or any of its ingredients or hydroxyzine. **PRECAUTIONS** Activities Requiring Mental Alertness: In clinical trials, the occurrence of somnolence has been reported in some patients taking ZYRTEC; due caution should therefore be exercised when driving a car or operating potentially dangerous machinery. Concurrent use of ZYRTEC with alcohol or other CNS depressants should be avoided because additional reductions in alertness and additional impairment of CNS performance may occur. **Drug-drug Interactions:** No clinically significant drug interactions have been found with theophylline at a low dose, azithromycin, pseudoephedrine, ketoconazole, or erythromycin. There was a small decrease in the clearance of cetirizine caused by a 400 mg dose of theophylline; it is possible that larger theophylline doses could have a greater effect. **Carcinogenesis, Mutagenesis and Impairment of Fertility:** No evidence of carcinogenicity was observed in a 2-year carcinogenicity study in rats at dietary doses up to 20 mg/kg/day (approximately 10 times the maximum recommended human daily oral dose on a mg/m^2 basis). An increased incidence of benign liver tumors was found in a 2-year carcinogenicity study in male mice at a dietary dose of 16 mg/kg/day (approximately 4 times the maximum recommended human daily oral dose on a mg/m^2 basis). The clinical significance of these findings during long-term use of ZYRTEC is not known. Cetirizine was not mutagenic in the Ames test, and not clastogenic in the human lymphocyte assay, the mouse lymphoma assay, and *in vivo* micronucleus test in rats. No impairment of fertility was found in a fertility and general reproductive performance study in mice at an oral dose of 64 mg/kg/day (approximately 26 times the maximum recommended adult human daily oral dose on a mg/m^2 basis). **Pregnancy Category B:** Cetirizine was not teratogenic in mice, rats and rabbits at oral doses up to 96, 225, and 135 mg/kg/day (or approximately 40, 180, and 215 times the maximum recommended adult human daily oral dose on a mg/m^2 basis), respectively. There are no adequate and well-controlled studies in pregnant women. Because animal studies are not always predictive of human response, ZYRTEC should be used in pregnancy only if clearly needed. **Nursing Mothers:** Retarded pup weight gain was found in mice during lactation when dams were given cetirizine at 96 mg/kg/day (approximately 40 times the maximum recommended adult human daily oral dose on a mg/m^2 basis). Studies in beagle dogs indicate that approximately 3% of the dose is excreted in milk. Cetirizine has been reported to be excreted in human breast milk. Because many drugs are excreted in human milk, use of ZYRTEC in nursing mothers is not recommended. **Geriatric Use:** In placebo-controlled trials, 186 patients aged 65 to 94 years received doses of 5 to 20 mg of ZYRTEC per day. Adverse events were similar in this group to patients under age 65. Subset analysis of efficacy in this group was not done. **Pediatric Use:** The safety of ZYRTEC, at daily doses of 5 or 10 mg, has been demonstrated in 376 pediatric patients 6-11 years of age in placebo-controlled trials lasting up to four weeks and in 254 patients in a non-placebo-controlled 12 week trial. The effectiveness of ZYRTEC for the treatment of seasonal and perennial allergic rhinitis and chronic idiopathic urticaria in this pediatric age group is based on an extrapolation of the demonstrated efficacy of ZYRTEC in adults in these conditions and the likelihood that the disease course, pathophysiology and the drug's effect are substantially similar between these two populations. The recommended doses for the pediatric population are based on a cross-study comparison of the pharmacokinetics and pharmacodynamics of cetirizine in adults and pediatric subjects and on the safety profile of cetirizine in both adults and pediatric patients at doses equal to or higher than the recommended doses. The cetirizine AUC and Cmax in pediatric subjects 6-11 years of age who received a single dose of 10 mg of cetirizine syrup was estimated to be intermediate between that observed in adults who received a single dose of 10 mg of cetirizine tablets and those who received a single dose of 20 mg of cetirizine tablets. **ADVERSE REACTIONS** Controlled and uncontrolled clinical trials conducted in the United States and Canada included more than 6000 patients aged 12 years and older, with more than 3900 receiving ZYRTEC at doses of 5 to 20 mg per day. The duration of treatment ranged from 1 week to 6 months, with a mean exposure of 30 days. Most adverse reactions reported during therapy with ZYRTEC were mild or moderate. In placebo-controlled trials, the incidence of discontinuations due to adverse reactions in patients receiving ZYRTEC 5 mg or 10 mg was not significantly different from placebo (2.9% vs. 2.4%, respectively). The most common adverse reaction in patients aged 12 years and older that occurred more frequently on ZYRTEC than placebo was somnolence. The incidence of somnolence associated with ZYRTEC was dose related, 6% in placebo, 11% at 5 mg and 14% at 10 mg. Discontinuations due to somnolence for ZYRTEC were uncommon (1.0% on ZYRTEC vs. 0.6% on placebo). Fatigue and dry mouth also appeared to be treatment-related adverse reactions. There were no differences by age, race, gender or by body weight with regard to the incidence of adverse reactions. Table 1 lists adverse experiences in patients aged 12 years and older which were reported for ZYRTEC 5 and 10 mg in controlled clinical trials in the United States and that were more common with ZYRTEC than placebo. **Table 1. Adverse Experiences Reported in Patients aged 12 years and older in Placebo-Controlled United States ZYRTEC Trials (Maximum Dose of 10 mg) at Rates of 2% or Greater (Percent Incidence), ZYRTEC (N=2034) vs Placebo (N=1612) respectively:** Somnolence (13.7% vs 6.3%), Fatigue (5.9% vs 2.6%), Dry Mouth (5.0% vs 2.3%), Pharyngitis (2.0% vs 1.9%), Dizziness (2.0% vs 1.2%). In addition, headache and nausea occurred in more than 2% of the patients, but were more common in placebo patients. Pediatric studies were also conducted with ZYRTEC. More than 1300 pediatric patients (6 to 11 years) with more than 900 treated with ZYRTEC at doses of 1.25 to 10 mg per day were included in controlled and uncontrolled clinical trials conducted in the United States. The duration of treatment ranged from 2 to 12 weeks. The majority of reported adverse reactions reported in pediatric patients (6 to 11 years) with ZYRTEC were mild or moderate. In placebo-controlled trials, the incidence of discontinuations due to adverse reactions in pediatric patients receiving up to ZYRTEC 10 mg was uncommon (0.4% on ZYRTEC vs 1.0% on placebo). Table 2 lists adverse experiences which were reported for ZYRTEC 5 and 10 mg in pediatric patients (6 to 11 years) in placebo-controlled clinical trials in the United States and were more common with ZYRTEC than placebo. Of these, abdominal pain was considered treatment-related and somnolence appeared to be dose related, 1.3% in placebo, 1.9% at 5 mg and 4.2% at 10 mg. **Table 2. Adverse Experiences Reported in Pediatric Patients (6 to 11 years) in Placebo-Controlled United States ZYRTEC Trials (5 or 10 mg dose) Which Occurred at a Frequency of ≥ 2% in Either the 5 mg or the 10 mg ZYRTEC Group, and More Frequently Than in the Placebo Group. ZYRTEC 5 mg (N=161), 10 mg (N=215) vs Placebo (N=309):** Headache (11.0%, 5 mg, 14.0%, 10 mg, 12.3%, placebo). Pharyngitis (6.2%, 5 mg, 2.8%, 10 mg, 2.9%, placebo); Abdominal pain (4.4%, 5 mg, 5.6%, 10 mg, 1.9%, placebo); Coughing (4.4%, 5 mg, 2.8%, 10 mg, 3.9%, placebo); Somnolence (1.9%, 5 mg; 4.2%, 10 mg; 1.3%, placebo); Diarrhea (3.1%, 5 mg; 1.9%, 10 mg, 1.3%, placebo). Epistaxis (3.7%, 5 mg, 1.9%, 10 mg; 2.9%, placebo); Bronchospasm (3.1%, 5 mg; 1.9%, 10 mg; 1.9%, placebo); Nausea (1.9%, 5 mg; 2.8%, 10 mg; 1.9%, placebo); Vomiting (2.5%, 5 mg; 2.3%, 10 mg; 1.0%, placebo). The following events were observed infrequently (less than 2%), in either 3982 adults and children 12 years and older or in 659 pediatric (6 to 11 years) patients who received ZYRTEC in U.S. trials, including an open adult study of six months duration; a causal relationship with ZYRTEC administration has not been established. **Autonomic Nervous System:** anorexia, urinary retention, flushing, increased salivation, dry mouth. **Cardiovascular:** palpitation, tachycardia, hypertension, cardiac failure. **Central and Peripheral Nervous Systems:** paresthesia, confusion, hyperkinesia, hypertonia, migraine, tremor, vertigo, leg cramps, ataxia, dysphonia, abnormal coordination, hyperesthesia, hypoesthesia, myelitis, paralysis, ptosis, twitching, visual field defect, syncope, dizziness. **Gastrointestinal:** increased appetite, dyspepsia, abdominal pain, diarrhea, flatulence, constipation, vomiting, ulcerative stomatitis, aggravated tooth caries, stomatitis, tongue discoloration, tongue edema, gastritis, rectal hemorrhage, hemorrhoids, melena, abnormal hepatic function, eructation. **Genitourinary:** polyuria, urinary tract infection, cystitis, dysuria, hematuria, micturition frequency, urinary incontinence. **Hearing and Vestibular:** earache, tinnitus, deafness, ototoxicity. **Metabolic/Nutritional:** thirst, dehydration, diabetes mellitus. **Musculoskeletal:** myalgia, arthralgia, arthrosis, arthritis, muscle weakness. **Psychiatric:** insomnia, sleep disorder, nervousness, depression, emotional lability, impaired concentration, anxiety, depersonalization, paroniria, abnormal thinking, agitation, amnesia, decreased libido, euphoria. **Respiratory System:** epistaxis, rhinitis, coughing, bronchospasm, dyspnea, upper respiratory tract infection, hyperventilation, sinusitis, increased sputum, bronchitis, pneumonia, respiratory disorder. **Reproductive:** dysmenorrhea, female breast pain, intermenstrual bleeding, leukorrhea, menorrhagia, vaginitis. **Reticuloendothelial:** lymphadenopathy. **Skin:** pruritus, rash, dry skin, urticaria, acne, dermatitis, erythematous rash, increased sweating, alopecia, angioedema, furunculosis, bullous eruption, eczema, hyperkeratosis, hypertrichosis, photosensitivity reaction, photosensitivity toxic reaction, maculopapular rash, seborrhea, purpura, skin disorder, skin nodule. **Special Senses:** taste perversion, taste loss, parosmia. **Vision:** blindness, loss of accommodation, eye pain, conjunctivitis, xerophthalmia, glaucoma, ocular hemorrhage. **Body as a Whole:** increased weight, back pain, malaise, fever, asthenia, generalized edema, periorbital edema, peripheral edema, rigors, leg edema, face edema, hot flashes, enlarged abdomen, nasal polyp, pain, pallor, chest pain, accidental injury. Occasional instances of transient, reversible hepatic transaminase elevations have occurred during cetirizine therapy. A single case of possible drug-induced hepatitis with significant transaminase elevation (500 to 1000 IU/L) and elevated bilirubin has been reported. In foreign marketing experience the following additional rare, but potential severe adverse events have been reported: hemolytic anemia, thrombocytopenia, orofacial dyskinesia, severe hypotension, anaphylaxis, hepatitis, glomerulonephritis, stillbirth, and cholestasis. **DRUG ABUSE AND DEPENDENCE** There is no information to indicate that abuse or dependency occurs with ZYRTEC. **OVERDOSAGE** Overdosage has been reported with ZYRTEC. In one adult patient who took 150 mg of ZYRTEC, the patient was somnolent but did not display any other clinical signs or abnormal blood chemistry or hematology results. In an 18-month-old pediatric patient who took an overdose of ZYRTEC (approximately 180 mg), restlessness and irritability were observed initially; this was followed by drowsiness. Should overdose occur, treatment should be symptomatic or supportive, taking into account any concomitantly ingested medications. There is no known specific antidote to ZYRTEC. ZYRTEC is not effectively removed by dialysis, and dialysis will be ineffective unless a dialyzable agent has been concomitantly ingested. The acute minimal lethal oral doses in mice and rats were 237 and 562 mg/kg, respectively (approximately 55 and 265 times the maximum recommended human daily oral dose on a mg/m^2 basis). In rodents, the target of acute toxicity was the central nervous system, and the target of multiple-dose toxicity was the liver. **DOSAGE AND ADMINISTRATION Adults and Children 12 years and older:** The recommended initial dose of ZYRTEC is 5 or 10 mg per day in adults and children 12 years and older, depending on symptom severity. Most patients in clinical trials started at 10 mg. ZYRTEC is given as a single daily dose, with or without food. The time of administration may be varied to suit individual patient needs. In patients with decreased renal function (creatinine clearance 11-31 mL/min), patients on hemodialysis (creatinine clearance less than 7 mL/min), and in hepatically impaired patients, a dose of 5 mg once daily is recommended. **Children 6 to 11 years:** The recommended initial dose of ZYRTEC in children aged 6 to 11 years is 5 or 10 mg (1 or 2 teaspoons) once daily depending on symptom severity. The time of administration may be varied to suit individual patient needs. 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ting cranky; they want to eat a hot dog, jump in the hotel pool and chill out. But the families with older children and couples on dates and office workers often find that evening is the best time to come to the Mall." I couldn't agree more. In the daytime it's the strollers that get me. They seem to grow bigger every year, like cars, so that some models hold all the family baggage as well as two, three or four children. I expect to see chauffeured versions any day.

But I'm interrupting Lawrence. "Most Thursdays last summer we got literally hundreds of people. One person quipped, 'The bathroom.' Yeah well, the bathroom, that's true. But most of them stayed and looked." Evening is made

I once saw a youth in a backward baseball hat setting some coins in an enigmatic pattern on the floor at the Hirshhorn and squatting down to stare at them as though they were part of an exhibition.

for quiet contemplation of any art, modern or not. And with its circular form, the Hirshhorn is ideal for this sort of walking meditation. It is rather hypnotic: you meander through, heading always in a gentle curve, noting perhaps, as you go, the changes that mark an artist's development—until suddenly the works look familiar and you realize you've started around again.

Of course, this is a world-class collection of contemporary art, but as I wandered through the Hirshhorn galleries I was impressed by the power of the spaces themselves. An artist I know remarked, "You could put almost anything in there and it would look terrific." I once saw a youth in a backward baseball hat setting some coins in an enigmatic pattern on the floor at the Hirshhorn and squatting down to stare at them as though they were part of an exhibition. He got a couple of takers, who stopped to gawk with him, but then he started to giggle and gave himself away.

"We get a range of reactions to our pieces," observed Lawrence, himself a respected artist whose work has been compared, for its quirky humor and layered meanings, to that of Red Grooms and Julian Schnabel. "You sometimes hear comments like, 'This stuff is junk.' You expect that. I've also talked to sophisticated people who just can't stand modern art. For that matter, some people refuse to go to movies with subtitles. But if you come in thinking of contemporary art as a barometer, a new experience, it can be really great. And many of the works here are just plain fun to look at."

I asked Suzanne Pender, who helps train the Hirshhorn's 79 volunteer docents, if they are up to dealing with the demands of the tourists, especially the querulous ones who want to know what everything means.

"Oh yes," she replied. "These docents are special." New Hirshhorn docents have all had college-level art history coursework, and train for nine months with museum staff and senior docents. Then they have to give a sample tour to experienced docents and are duly critiqued. Many docents speak foreign languages, a distinct advantage in polyglot Washington.

"We attract an unusual kind of person," Pender noted. "We don't simply tell them what to say about each work or give them scripts to memorize. We allow them to develop their own tours, based on their knowledge, interests and strengths. They improve and change the tours as they go along and as the collection changes." If the docent can't answer a question, she or he is supposed to go find out and write to the person afterward. "We don't have Acoustiguides at the Hirshhorn. We think docents are better. They encourage interaction. You can actually see a person learning something in an answer to a question; you can see the light go on. It's quite exciting."

It's just as well the docents are trained in depth, for as Pender observed, the audience can get quite technical. "I see staff people from other museums, some artists I know, students from the Corcoran, painters, photographers, all kinds of people."

Pender is herself an artist, a painter who also does three-dimensional works. All told, about 15 Hirshhorn staff members are serious artists.

This summer, films related to selected artworks are being shown at the Hirshhorn. For example, a watercolor from the startling "AIDS Series" by Masami Teraoka, who exhibited last year at the Sackler, will be discussed in connection with *Cold Fever*, a new film by Fridrik Fridriksson about a Japanese visitor to Iceland. Both works are concerned with the impact of today's frantic world upon cultural traditions.

Viola Frey's large ceramic *Family Portrait* is reminiscent of Zorba's view of marriage: "Wife, children, . . . the full catastrophe."

Incidentally, the Hirshhorn is showing more works than ever from its permanent collection this summer. About 100 pieces acquired over the past five years are being displayed, some for the first time. There is also a small exhibition on French artist Raymond Duchamp-Villon. As a youth he visited the Halls of Machines at the Paris Universal Expositions of 1889 and 1900. His sculpture *The Horse* is an intriguing meld of machine-based imagery and equine anatomy. (The Hirshhorn Website, http://www.si.edu/hirshhorn, is full of information on these shows and all aspects of the museum. You don't own a computer? No problem—many public libraries around the country now provide Web access.)

I asked Lee Aks, Hirshhorn sculpture conservator and an artist who does abstract works in cast bronze, what happens to all the outdoor art when the weather is bad. "We're busy all spring and summer, getting ready for winter," he said. "We clean every outdoor piece in various ways, depending on what they're made of, and put protective coatings on them, waxing, oil coating. We might have to touch up the surfaces, examine welds, replace fastenings, or whatever."

There are more than 70 sculptures outside the Hirshhorn in the garden and plaza areas. "We clean them using special detergents and a high-pressure washer," Aks explained. "Sometimes we blast metal sculptures with crushed walnut shells to remove surface dirt. They bounce off the surface without grinding it as sand does. And they are biodegradable. Of course, you do have to wear a helmet and face mask while running the thing."

These sculptures have a hard life. Their linseed-oil coating deteriorates, turns brittle and flakes off in the sun. Cables snap in the wind. "Some of them are so tactile that many people can't resist touching," Aks said. "Thousands of touches can cause bronze to lose its patina, because the oils in people's skin are acidic, and they can actually etch into the metal surface. Kids start to climb on the pieces, or not knowing any better, parents put them up there to take a picture. They think the garden is a playground. But even tennis shoes have pebbles in the soles, and they scrape on everything. It's almost like vandalism."

Aks has to protect works of bronze, granite, painted steel, stainless steel, cast iron and mild (low-carbon) steel in sizes from mini to monumental. The big, black Calder stabile is among the hardest to preserve, but others face particular troubles in stormy weather, notably Kenneth Snelson's *Needle Tower*, 60 feet high, all tubes and cables. When those break in high winds, the whole sculpture has to be laid on its side for repairs.

"And that takes a lot of manpower," Aks sighed. "But we try to have everything ready before winter. Then, all we have to do is brush off the snow, especially from the stone pieces so they won't develop little cracks." Next time you stroll down the Mall on a balmy summer evening, think about those sculptures. They must wait there through all kinds of weather. Just so you can look at them.

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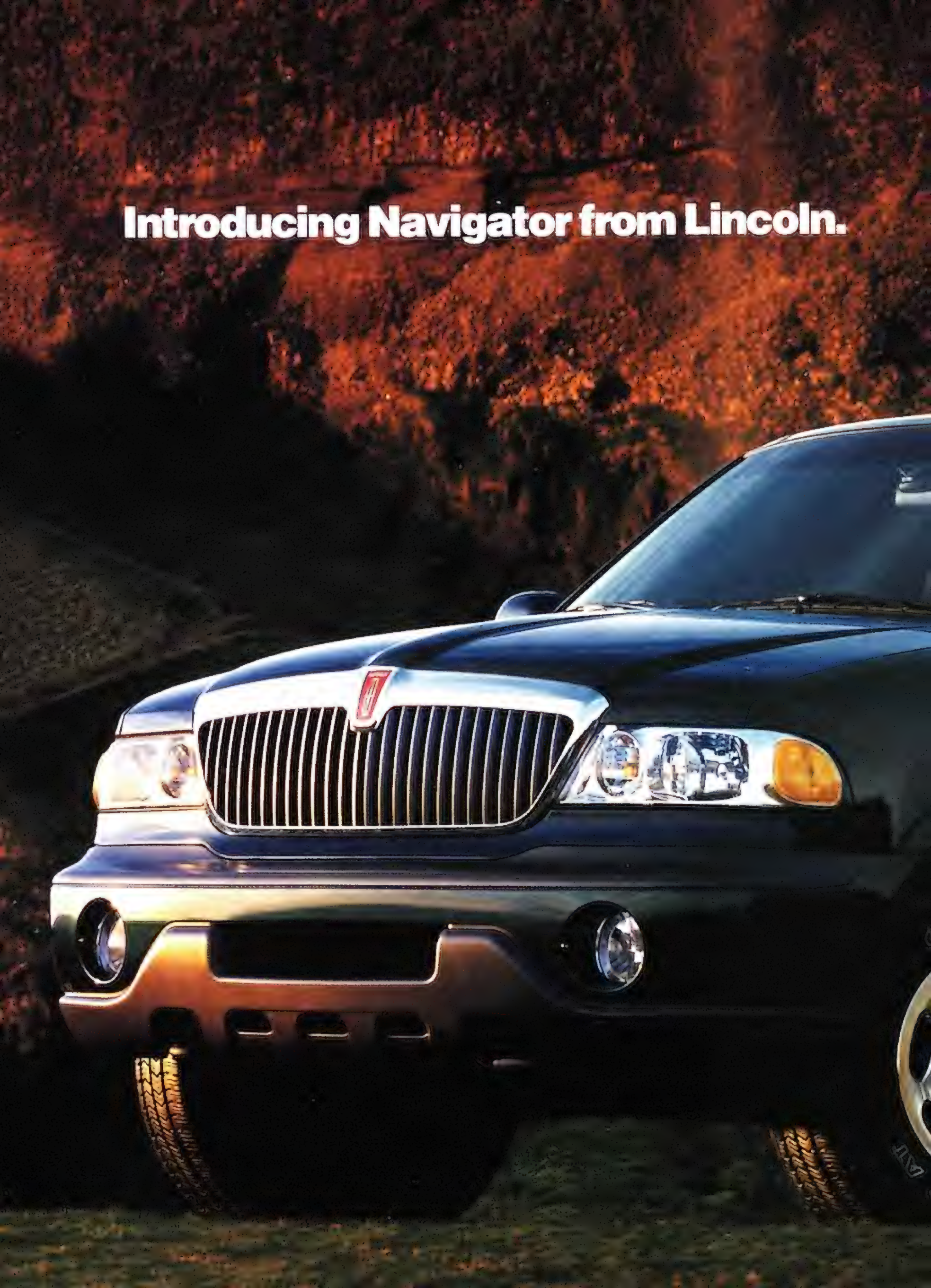

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(Opposite page): Illuminated running boards ease entry and exit. Navigator accommodates up to eight passengers and cargo yet still fits in most garages. (Above, clockwise, from top left): Standard engine is a 5.4-liter overhead-cam V-8. Independent short- and long-arm (SLA) front suspension absorbs bumps and contributes to a smooth ride. A Class III towing package is standard. Navigator's memory system lets you program driver's seat and side mirror positions for three drivers.

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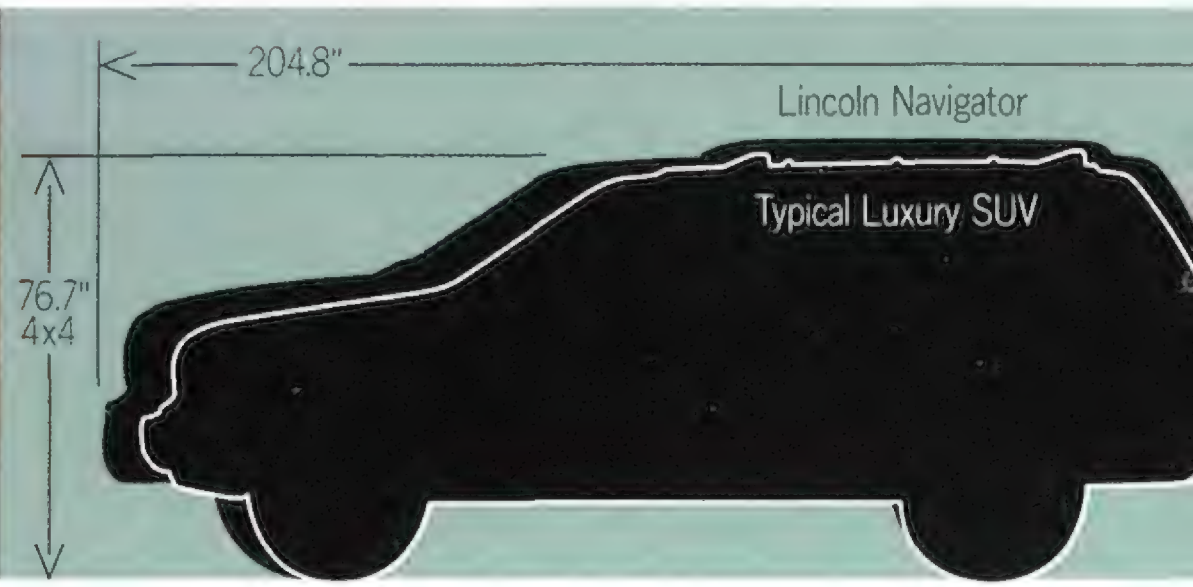

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1☐ Prestigious, exclusive and technically innovative with outstanding performance and handling.

2☐ Sporty and fun to drive with eye-catching styling and unique features.

3☐ Elegantly styled, luxurious, comfortable and just the right size.

4☐ Rugged, versatile and dependable with all-terrain capability.

5☐ Progressively styled and technically advanced with responsive road performance and quality fit and finish.

6☐ Traditional, classic, spacious and comfortable with a smooth, quiet ride.

When do you plan to acquire your next vehicle?

1☐ 0–3 mos. 4☐ 1–2 years
2☐ 4–6 mos. 5☐ No definite
3☐ 7–12 mos. plans

How do you plan to acquire your next vehicle?

1☐ Purchase 3☐ Undecided
2☐ Lease

What is your age category?

1☐ Under 35 4☐ 55–64
2☐ 35–44 5☐ 65 or over
3☐ 45–54 6☐ Prefer not to answer

What vehicle do you currently drive?

Year____ Make _____

Model _____
(e.g. '95 Lincoln Continental)

May we contact you through E-mail?

1☐ Yes 3☐ Do not have
2☐ No E-mail access

If yes, what is your E-mail address?

_____

_____

Name _____ Address _____

City _____ State _____ ZIP _____

( )
Telephone

ould be.

The Polar Visions of Galen Rowell

SMITHSONIAN HIGHLIGHTS

THE SEVERE BEAUTY, FORBIDDING TERRAIN and exotic life-forms of our polar regions have long been a source of wonder and a beacon to adventure. At opposite ends of the Earth, the Arctic and Antarctic remain largely untouched—our last, great, wild frontiers. Although often perceived as similar—icy, empty and cold—the two realms differ dramatically in topography and wildlife. Since 1972, world-renowned photographer Galen Rowell has made more than 20 trips to the polar precincts. Traveling in every conceivable conveyance, from dogsled to nuclear icebreaker, Rowell has focused his lens on documenting what sets these poles apart.

A selection of his photographs can now be seen in a special exhibition at the National Museum of Natural History. On view through August 4, "Poles Apart: Parallel Visions of the Arctic and Antarctic" features images from Rowell's 1995 book of the same title. "Direct photographic comparisons make the similarities and differences come alive in ways not always apparent even to those who have visited both realms," says Rowell. The violet hues of Alaska's frozen Chukchi Sea form a vivid counterpoint to the startling sand dunes of Antarctica's Dry Valleys. The horned puffin of the North (above, left) and the macaroni penguin of the South (above, right) evolved similar clown-like looks at opposite poles. By creating images that reveal the importance of what he calls "the last, vast wild places on Earth," Rowell has compiled a stirring visual record of the top and bottom of the world. —*Diane M. Bolz*

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SMITHSONIAN HIGHLIGHTS

"America's Smithsonian"

BIRMINGHAM-JEFFERSON CIVIC CENTER, BIRMINGHAM, ALABAMA

(THROUGH July 9) The traveling exhibition of Smithsonian treasures continues its tour. *Note:* Admission is free, but passes are required. Advance passes are available for a service fee of $3.50 each by calling 1-800-913-TOUR. The Smithsonian Voices of Discovery program will bring a series of free public lectures to the Birmingham area July 8-12.

Special July Exhibitions, Events

ART NIGHT ON THE MALL

The Freer, Sackler, Hirshhorn and African Art museums will be open Thursday evenings until 8 P.M. through August 28. The Ripley Center's International Gallery and the Hirshhorn's outdoor Full Circle Café will also remain open. See *Around the Mall*, page 28.

FESTIVAL OF AMERICAN FOLKLIFE

Life in the Mississippi Delta, African immigrants in Washington, D.C. and sacred music will be the focus of the Smithsonian's 31st annual Festival of American Folklife, to be held on the Mall, June 25-29 and July 2-6.

NATIONAL MUSEUM OF NATURAL HISTORY

Poles Apart: Parallel Visions of the Arctic and Antarctic (through August 4) Photographs by Galen Rowell. See *Highlights*, page 34.

Amber: Window to the Past (through September 1) Exhibition examines the scientific and artistic significance of nature's "organic jewel." *Note:* Tickets are required; call (202) 357-4577.

Gems and Minerals Hall The gallery is closed for renovation until September 20. The famous Hope Diamond is on view on the second floor of the Rotunda.

NATIONAL MUSEUM OF AMERICAN HISTORY

Audubon at the Smithsonian (through May 1, 1998) Smithsonian Institution Libraries' show looks at the life and work of naturalist-artist John James Audubon (1785-1851).

From Frying Pan to Flying V: The Rise of the Electric Guitar (through September 30) Display tracks the development of the electric guitar.

NATIONAL POSTAL MUSEUM
[NEAR UNION STATION ON CAPITOL HILL]

Maps on Stamps (through October 15) Exhibition showcases more than 100 U.S. and foreign stamps that feature aspects of world geography.

NATIONAL AIR AND SPACE MUSEUM

Women and Flight (through September 12) Images of contemporary women pilots by NASM photographer Carolyn Russo. See page 92.

Space Race New permanent exhibition traces the competition in space between the United States and the former Soviet Union.

NATIONAL ZOOLOGICAL PARK

Think Tank Permanent exhibition explores the biology and evolution of animal thinking.

FREER GALLERY OF ART

The Seven Thrones of Jami: A Princely Manuscript from Iran (runs indefinitely) Illustrations from a 16th-century Persian mystical poem by Jami.

Telling Tales in Japanese Art (through August 14) Paintings from the 13th to the early 20th century highlight Japanese visual narration.

ARTHUR M. SACKLER GALLERY

King of the World: A Mughal Manuscript from the Royal Library, Windsor Castle (through October 13) Paintings from the Padshahnama, a 17th-century imperial manuscript from India, chronicle the first decade of the illustrious reign (1627-58) of Shah-Jahan, builder of the Taj Mahal.

Planning a Smithsonian Visit?

Receive a free Associates' planning packet. Write Smithsonian Information, Smithsonian Institution, Washington, D.C. 20560, or call 202-357-2700 (voice) or 202-357-1729 (TTY), 9 A.M. - 5 P.M., Monday-Friday; 10 A.M. - 4 P.M., Saturday-Sunday. *Note:* Parking near the Smithsonian is limited. The Metrorail subway is convenient to all museums (details in packet).

Begin your visit at the Smithsonian Information Center's Associates' Reception Desk—open 9 A.M. - 4 P.M. daily—in the Castle. Special materials await you there. The Court dining room and all other dining facilities in the Museum of Natural History are closed. Associates may receive a discount on table service at the Air and Space Museum's Wright Place restaurant, open 11:30 A.M. - 3 P.M. daily.

Smithsonian museums are generally open 10 A.M. - 5:30 P.M. daily, except December 25. Hours at the National Zoo are 10 A.M. - 6 P.M. daily for buildings and 6 A.M. - 8 P.M. for grounds.

SMITHSONIAN WEBSITE

The Smithsonian home page on the World Wide Web (http://www.si.edu) offers on-line information about exhibitions, collections, events, products.

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questions

❑ Are you a woman?

❑ Are you over 50?

❑ Are you past menopause?

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NATIONAL MUSEUM OF AFRICAN ART

Treasures from Tervuren: Selections from the Belgium Royal Museum for Central Africa (through October 19) Exhibition features objects from the world's greatest collection of Central African art.

HIRSHHORN MUSEUM & SCULPTURE GARDEN

Directions—Louise Lawler: "Monochrome" (July 17-October 19) First solo show in Washington for the New York-based conceptual artist.
The Hirshhorn Collects: Recent Acquisitions, 1992-1996 (through September 7) Works by Jean Dubuffet, Claes Oldenburg and Andy Warhol.

NATIONAL PORTRAIT GALLERY

Recent Acquisitions (July 11-February 8, 1998) Display includes a self-portrait sculpture by Grant Wood.
Le Tumulte Noir: Paul Colin's Jazz Age Portfolio (through January 4, 1998) Lithographs by French artist Paul Colin capture the explosive Josephine Baker.

NATIONAL MUSEUM OF AMERICAN ART

Singular Impressions: The Monotype in America (through August 3) An overview of the monotype process.
David Hockney's 'Snails Space': Painting as Performance (through September 14) A double-canvas painting and accompanying floor piece are illuminated by a computerized sequence of lights.

RENWICK GALLERY

Reinstallation of the Permanent Collection Thematic reinstallation celebrating the Renwick's 25th anniversary showcases works by prominent craft artists.

ARTS AND INDUSTRIES BUILDING

The Jazz Age in Paris, 1914-1940 (through July 13) SITES exhibition explores the early jazz movement.
Life on the Road: The Photographs of Milt Hinton (through July 13) Images of fellow musicians by bassist Hinton.
Stories of the People (through August 10) Artifacts from the National Museum of the American Indian.
Discovery Theater Live theater for young audiences. Call (202) 357-1500 (voice or TTY) weekdays, 9 A.M. - 4 P.M.

Designed by Mike Scherer in 1995, the Snowfall 2 tent is manufactured by Kelty. The aluminum-and-nylon structure is on display at the Cooper-Hewitt through October 19.

THE CASTLE—INFORMATION CENTER

Smithson's Gift Permanent display tells the story of the British scientist whose bequest founded the Smithsonian.

INTERNATIONAL GALLERY, S. DILLON RIPLEY CENTER

American Voices: Latino Photographers in the United States (through September 28) Photographs and artworks (1930s-1990s) highlight the work of top Latino artists around the country.

ANACOSTIA MUSEUM

Museum Renovation The museum is closed until the fall of 1997.

HEYE CENTER, NATIONAL MUSEUM OF THE AMERICAN INDIAN [NEW YORK CITY]

Agayuliyararput (Our Way of Making Prayer): The Living Tradition of Yup'ik Masks (through August 17) More than 200 masks created by Yup'ik Eskimos.

COOPER-HEWITT, NATIONAL DESIGN MUSEUM [NEW YORK CITY]

Do-It-Yourself Architecture for the Great Outdoors (through October 19) Display of contemporary styles of tents illustrates how these structures embody many themes of modern architecture.

THE SMITHSONIAN ASSOCIATES, RESIDENT PROGRAM

To become a member, or for fee and ticket information, call (202) 357-3030. Here are some July events:
Amber: Window to the Past (July 12, 10 A.M. - 5 P.M.) Seminar examines nature's fabled "organic jewel."
Rodin: The Hands of a Genius (July 19, 10 A.M. - 5 P.M.) Seminar traces the life and legacy of the famed sculptor.

SMITHSONIAN INSTITUTION TRAVELING EXHIBITION SERVICE

SITES organizes and circulates exhibitions to cities throughout the United States and abroad. Write SITES, Smithsonian, Washington, D.C. 20560. July exhibitions include:
◆ Syracuse, New York (July 12-August 24) *Vanishing Amphibians*, Milton J. Rubenstein Museum of Science and Technology.

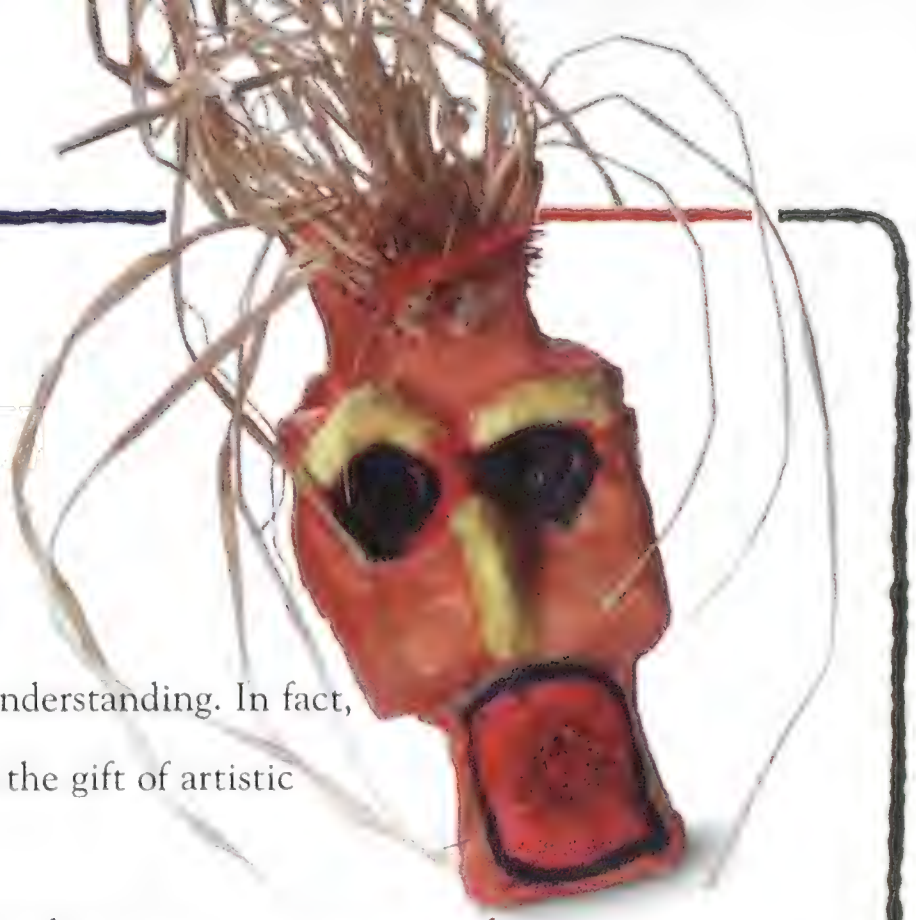
EXHIBITION CATALOGS

Catalogs now available include:
- *Women and Flight* ($40/$24.95 paper)
- *Poles Apart* ($39.95 cloth)
- *Amber: Window to the Past* ($49.50/ $34.95 paper)

To order, send check or money order to Smithsonian Museum Shops, P.O. Box 1140, Newington, Virginia 22122. Add 15 percent of purchase price for postage and handling (minimum, $4.50).

COOPER-HEWITT, NATIONAL DESIGN MUSEUM

In This Classroom, It Doesn't Take Eyesight To Have A Vision.



Nor does it take hearing to acquire understanding. In fact, all Rachel Ely needs to give her students the gift of artistic understanding is an open mind.

Rachel, an art specialist, developed and put into practice a visual arts program designed to serve all her students, pre-school through sixth grade, including those with visual and hearing disabilities.

She employs scented markers to help her sight-impaired students choose colors for their warm or cool drawings and, with papier-mâché, puts her students' senses of touch to work creating animals and figures.

For showing her students how to see and interpret their world in a different way, Rachel Ely is our newest Good Neighbor Award winner. State Farm is pleased to contribute $5,000 in her name to McGavock and Glengarry Elementary Schools in Nashville, Tennessee.

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The Good Neighbor Award was developed in cooperation with the National Art Education Association.

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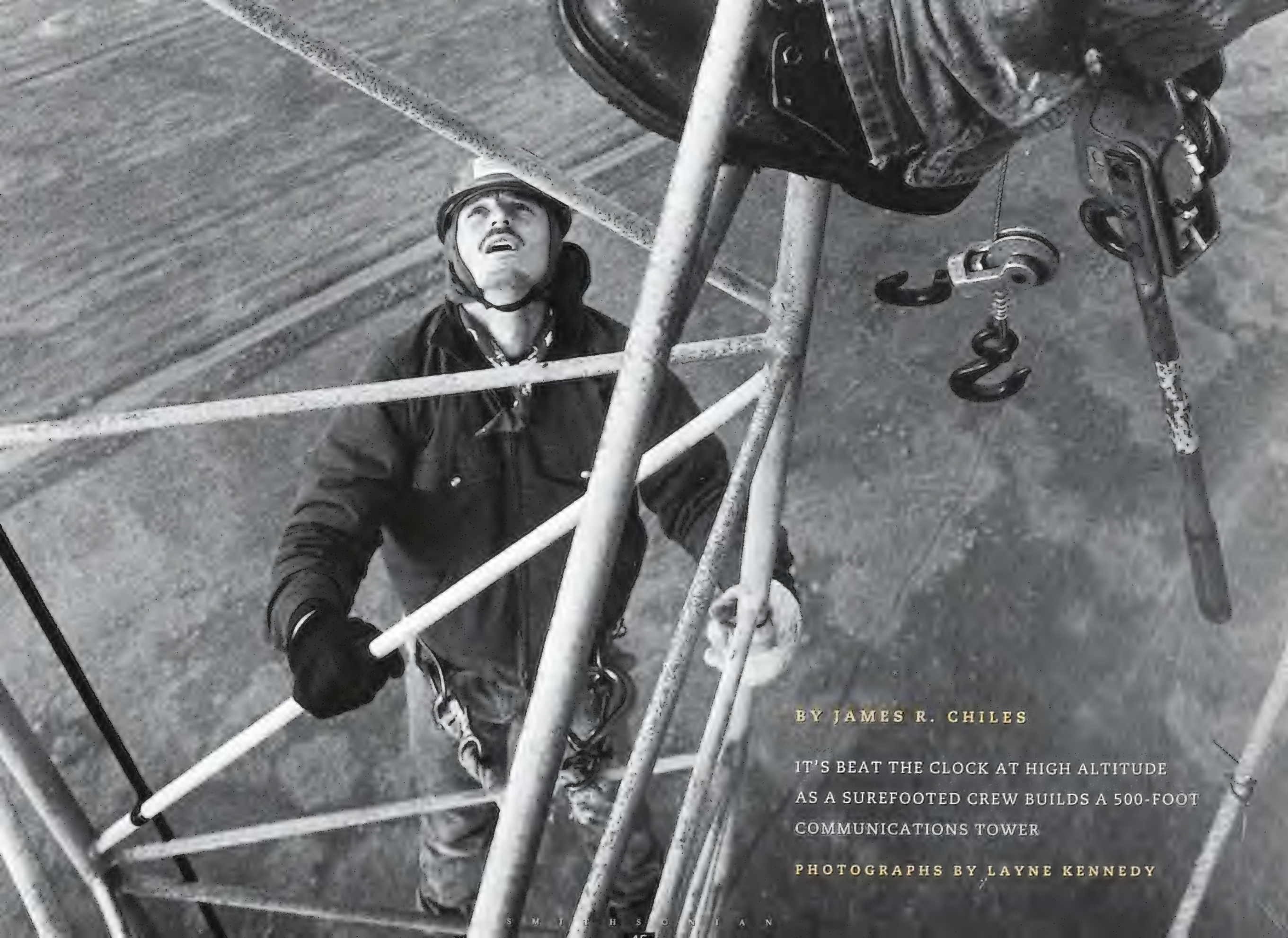
"WE GOT US SOME
SKY
TODAY, BOY!"



BY JAMES R. CHILES

IT'S BEAT THE CLOCK AT HIGH ALTITUDE AS A SUREFOOTED CREW BUILDS A 500-FOOT COMMUNICATIONS TOWER

PHOTOGRAPHS BY LAYNE KENNEDY

FUNNY THING—THIS BROADCAST TOWER HADN'T LOOKED ALL THAT TALL WHEN I was on the ground looking up. But now I'm in a safety belt and hanging from a cable 500 feet in the air, and as I swing over to step onto a steel brace on the tower, the ground below looks like it's a mile or more away. Fortunately my escort this morning is Charlie Carroll, a hard-smokin', hard-cussin' but ultimately sentimental tower hand for V. L. Strickland Tower Service of Abilene, Texas. Charlie talks me through the technique of shifting the twin lanyards for my safety belt from the hoist to the tower. His stream of lurid jokes and no-nonsense advice keeps the panic from welling up. He inspects my rigging once more, and then, satisfied that I won't be leaving without saying goodbye, he leans back comfortably in his own safety belt, just like a lineman on a 500-foot telephone pole. He taps out a cigarette from its pack and lights up, using a flap of his jacket to shelter his lighter from the 20-mile-per-hour wind. Charlie suggests I take my hands off the tower, too, and lean back in my belt. I order my hands to release their grip, but a minute later they're clamped on the braces again, without any urging from me.

I remind myself that, according to the tower crews I've talked to, people rarely just slip off a tower in the way that you or I might topple off a stepladder while clipping branches from a tree. "You couldn't hardly throw a man off a tower, they hang on so tight," an old-timer had said. One worker told me that the first few weeks of work left the inside of his arms bruised from hugging the steel framework.

I know logically that the tower is built to withstand hurricane winds, but up here it looks no stronger than an overgrown scaffold, just a Jack's beanstalk sprung up from steel beans, held up only by thin wires angling steeply to the cow pasture below. The West Texas horizon is brown and fuzzy, but the tower is sharp and clear, and every shiny nut and bolt stands sharp against the orange paint. I want to get the hell off; I want to stay up all day.

"It sure turned out to be a perfect day, with the weather and all," I offer by way of conversation. "Every day's a good day," Charlie replies. "A good day to be alive."

Welcome to the world of the tower hand. If you think of today's telecommunications breakthroughs as a garden of wonders, then communications towers must be wildflowers, or perhaps weeds, popping up everywhere from remote mountaintops to the Sears Tower and so common now as to hardly be worthy of comment from casual passers-by. And yet they are numerous and getting more so. The Federal Communications Commission (FCC) estimates that the country now bristles with 75,000 towers tall enough to get attention from the aviation authorities, with perhaps a thousand more expected each year. Most towers built today are less than 400 feet high and hold antennas for cell phones and mobile-radio systems. About a dozen American towers, all for radio and TV broadcast, are more than 2,000 feet high. The tallest is a 2,063-foot tower owned by KVLY-TV near Fargo, North Dakota, and under current federal rules the American record is not likely to be broken in the near future. All the tallest towers are guyed, meaning they're held upright by taut cables anchored to the ground. Self-supporting towers have reached to a little more than half that height and have legs that splay out for stability like those on the Eiffel Tower.

For years the tall-tower construction market has been moribund, but now—probably to the dismay of bird enthusiasts, who mourn the fact that thousands of birds lose their lives each year by flying into tall towers at night—another wave of cloud-scrapers is on the way. They will serve the new medium called digital television (including High Definition TV), now being tested in a few places like Washington, D.C. By some estimates, digital television is going to need a thousand new towers, each a thousand feet high or higher. If true, that's going to stretch this specialized trade, which is mostly populated by small family-owned companies. Already it's hustling to keep up with orders from cellular phone companies and developers of PCS (personal communications services), the next-generation cellular phone.

"You can get the equipment you need, but you can't find people just like that," says Ken Meador, a vice president at TWR Telecom. "Tower workers run the gamut in age and background, but they have one thing in common. They're all adrenaline junkies. I grew up in the oil patch, and I thought those men were the true individualists, a hard bunch. But not just anybody can be a tower hand. Fear of

High above Ropesville, Texas, Hector Bermea rides the "headache ball" up the trolley line to the top of the tower. Above left, two safety belts dangle from pelican hooks.

heights may be the only universal fear."

Some new hires, otherwise as tough as hickory ax handles, find that clambering up the outside of a tower and leaning backward into space, with nothing but death below in case of a mishap, is so terrifying that they can't tolerate even one full day of the work. Perhaps it's because tower construction goes on without benefit of the safety nets sometimes used in other types of high-up work, like high-rise construction. And a tumble off the side isn't the only threat to life. Towers are narrow, high-performance structures more vulnerable to errors and accidents during work than are buildings or bridges. The world's tallest tower, at 2,120 feet, crashed to the ground in Poland during a 1991 attempt to replace rusting guy wires.

"There's a certain thrill to it, but you have to appreciate that you can die."

For those willing to put up with the risks, there are certain dividends. There's plenty of fresh air and the vistas are second to none. "You have a vantage point like in a jet, only you're stationary and can see in all directions," says Don Doty, president of Doty-Moore Tower Services in Cedar Hill, Texas. "On a calm day it's really a beautiful sensation." Others recount days when they climbed up through clouds, emerging with their heads in the clear and their legs still in fog. "Sometimes you can see waves coming at you in the cloud banks," says Nate McIlhaney, a steeplejack and tower hand now based in Golden, Colorado. "There's a certain thrill to it," he adds, "but you have to appreciate that you can die. I remember a foreman asking me, 'Are you scared about this?' I said, 'Yep!' And he said, 'Good! That'll keep you alive. If you stop being scared, you're in trouble.'"

Visiting a convention of tower erectors in Arizona, I hear comparisons to picturesque occupations—cowboys on a trail drive, suggests one; mountain climbers, offers another—but I'd class them with sailors from the windjammer era. They talk of going "aloft," they work in all weather, and they need to understand rigging and knots as well as any bos'n.

Finally, like sailors, tower hands stay out from home for long tours of duty, returning only for holidays. "Our crews are out 40 weeks a year, and then people don't understand why they want two weeks off at Christmas," says Bill Carlson, president of Tower Systems Inc., in Watertown, South Dakota. Tower Systems' employees travel from state to state in company trucks, and so typically have no wheels of their own for cruising at night or to steer back home for a weekend break. And, in fact, tower-erection crews on the road usually have no weekends at all. The distance from home, the need to take advantage of good weather, and the expense of keeping employees on the road often conspire to make seven-day workweeks of 60, 80, even 90 hours. It can make a tower hand feel that life is passing him by. Mike Allen, who worked for Carlson's company, says it can be awfully difficult "when you're going down the road and you see families on vacation with the kids in back. That kind of gets to you." As he hitches a ride in my van to a construction site, Allen suggests, "Would you please put in your article that our women shouldn't get so mad that we're gone all the time? If the company'd pay us better, we'd even bring 'em along!"

A week later, I hear the same plaint from Butch Strickland of Strickland Tower Service: "If we didn't have woman problems," he observes to his crew, "we wouldn't have no problems a'tall." There is general agreement from Charlie Carroll, spare of form but with a voice that's bigger than life; Gerry Lane, private in his ways, a newcomer to the trade and determined to be a good hand; and Danny Baldivia, a truck driver who spent years working with Butch and Charlie in the oil fields of West Texas and who is here filling in with ground duties until Hector Bermea, Butch's lead tower worker, returns from a trip to Abilene. All are in their late 30s and all have children. "On the road, you work seven days—that's why I got divorced," Butch says. "If it was up to me, I'd still be married, but it wasn't." His company builds and maintains towers in several different states.

The first time I see Butch's crew in action, the men are sprinting across the pasture in front of my car as I drive into the construction area. Perhaps a footrace, I speculate, or an impromptu football game. Then the men pull up at a guy-wire anchor, grab a set of tools and go to work adjusting tension on a cable. Charlie leapfrogs onto Gerry's shoulders and uses the extra height to adjust a cable clamp.

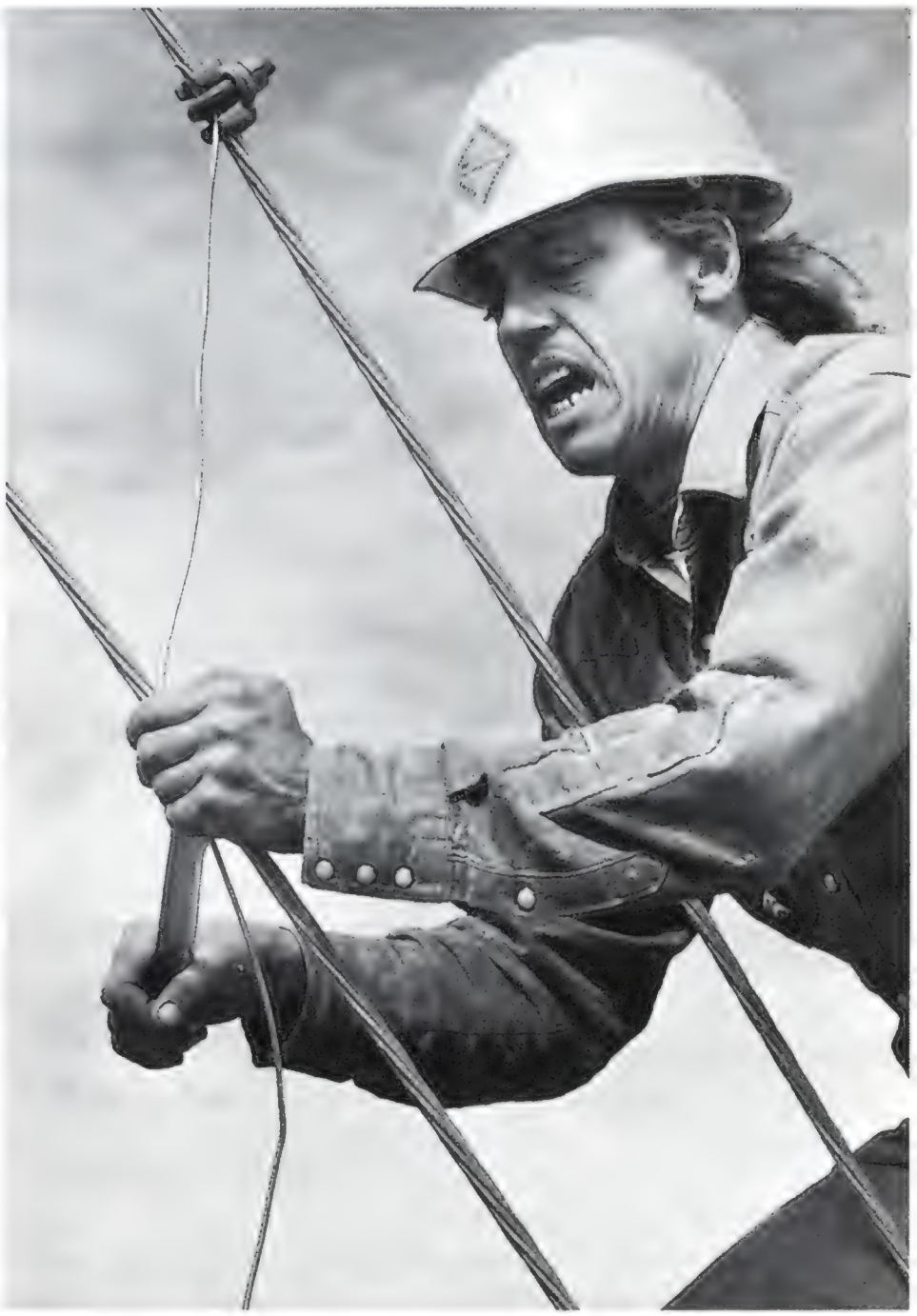
I learn this Friday afternoon that while the tower hands don't usually sprint from task to task, moderate weather like today makes them hustle. And this 500-foot tower job is under a "drop-deadline." Under ideal conditions, Butch tells me, the steel could have gone up in three days. But this job, which first received a permit in late November and had gone under construction the week before Christmas, had dragged on for nearly a month since then, in the face of shipment mix-ups, high winds and icing. At this point the Strickland crew is about 120 feet short of finishing this tower. Under a provision of the new federal telecommunications law, the station has only until February 8, or about three weeks, to start broadcasting. Otherwise it will lose its license, as well as the construction permit that co-owner Tom Crane has spent five years wresting from the FCC.

To make sure the transmitter and copper antenna would arrive without fail from the East Coast, Crane's partner, Paul Beane, had driven eight straight days there and back in a rental truck. Mission accomplished, Paul spends much of

Near a completed tower, left, a section is hoisted 260 feet aloft to a new one being built by Strickland Tower Service. Sections are raised by means of the "gin pole" fastened to the side.

Back at the Strickland shop in Abilene, Texas, Charlie Carroll does a welding job on a headache ball, which weighs some 200 to 300 pounds.

Grounded by fierce winds, Bermea and Gerry Lane sit on the leeward side of the supply truck, swapping stories as they make up butterfly clamps.



Cursing as always when putting out 100 percent, Carroll installs grounding wire near a guy-wire anchor, one of the last jobs to be done on the 500-foot tower. Some 90 feet of wire is used to protect the tower against damage from lightning strikes.

every day in this pasture, taking a break from his two other businesses to make sure the tower is finished on time. Puttering here and encouraging there, fielding calls on the cell phone jammed in the back pocket of his overalls, Paul counts the days and feet remaining. "I'm not the kind who likes to wait for bad news," he explains, smoothing back his long, silvery hair.

Erection has changed very little from the methods that were used to put up the first big wave of TV towers in the 1950s. No helicopters or big cranes are usually necessary. This tower, bought used from an oil company, had arrived in 20-foot steel sections that stand up vertically and bolt together at the ends. The crew uses a small derrick slung off the top of the structure—called a gin pole, in traditional rigging lingo—to hold the sections a few feet from the tower as the winch pulls them up.

Butch runs the winch truck with its slow-turning cable drums; Danny stays on the ground with him and handles a yellow nylon "tag line" that keeps the loads from bashing into the tower on the way up; and Gerry and Charlie are lashed atop the tower to manhandle each arriving section into place and bolt it down. After every 80 feet of tower, the two men must come down and help run three guy wires out to their anchor points. Once the guy wires are cinched to the proper tension—up to 2,750 pounds—the two are free to go back up and install more tower sections. When climbing, they pause every 40 feet or so and hook their safety belts to the ladder rungs. Counting such safety breaks, the climb takes more than a half-hour.

Singers may call the wind "Mariah," but to tower workers it's just trouble.

In front of the transmitter building for the Ropesville tower, a microwave antenna dish awaits its trip to the top as the crew hustles in the cold January dusk.

I watch as a white-painted section leaves the ground on a cable, rising at a sedate couple of feet per second. Singers may call the wind "Mariah," and it gets sailboat owners where they want to go, but to tower workers it's just trouble, catching loads and swinging them into danger. The low winch speed gives Butch a safety margin to stop the load if a gust of wind were to swing a section toward the tower or, worse, hang it up under a guy wire.

The biggest chunk of metal on a tower job is the gin pole, which has to be shifted frequently to follow the top of the tower as it rises. "Movin' the gin pole is the most dangerous part of the whole expedition," Butch explains.

A failed gin pole led to a broken guy wire 15 years ago in Missouri City, Texas, bringing down an 1,800-foot tower and killing five men. And a 1,551-foot tower roared into the ground last year in Cedar Hill, Texas, during an operation to move the gin pole. Two workers fell 1,300 feet straight down; one man was propelled off to the side by the enormous stresses of the collapse, landing 600 yards away. The avalanche of steel, plummeting from such a great height, scattered debris for hundreds of feet and so thoroughly pulverized a pickup truck parked a hundred feet away, according to Lieut. Jim Zerban of the city's police department, that only a hood ornament could identify the model.

Everything about towers a third of a mile high is ponderous. The guy wires on the Strickland tower are a half-inch in diameter; the wires for the tallest ones are two to three inches thick. According to Don Doty, whose company specializes in tall-tower work and also employed the three men killed at Cedar Hill, the structural steel for a 1,600-foot tower weighs 750 tons and takes six to eight workers a half-year to put up. Just laying out all the sections before construction can fill a good-sized field.

"Tag!" comes the call from Charlie, up top, and Danny pulls a little harder on the tag line to ease a rising section away from the tower. Charlie loves his part of the action, and yet little about stacking steel in January looks like fun to me. There's no windbreak against the stiff breeze, and Charlie wears no gloves up there, even in near-freezing temperatures. Gloves, he says, make it more likely he'll drop something or lose his grip when handling a rope.

I amble over to take up a position behind Butch, who is standing at the winch controls alongside his red truck. He is wearing denims and a striped shirt, his neck burned by sun and wind to the consistency of a leather harness. Butch competed on the rodeo circuit as a young man, giving it up after a bull stomped on his foot. He spent the next eight years driving trucks in the oil fields and then returned to the job he knew in high school, building towers with his dad, Virgil. "In our family, work's always been first," Butch says.

"We got us some sky today, boy!" says Gerry as the men gather up their tools at sunset, and Butch adds that one more good day should be enough to complete the tower.

Waiting for Butch to finish up whatever he's doing in the

The Strickland guys—(left to right) Charlie Carroll, Butch Strickland, Hector Bermea and Gerry Lane—look like tough characters, but on the job the good-natured ribbing never stops.

transmitter building so we can head for town, the rest of us relax on a pile of concrete forms and tune in to the Charlie Show. In less than 15 minutes, Charlie covers the following ground: three or four unprintable jokes; why he should have a comedy special on HBO; the owls and hawks that will be nesting on the tower; why he's leaving tower work to take a job as maintenance man in a trailer park; why he liked *Dark Shadows*; how much his youngest daughter loves a plate of fried mushrooms at the truck stop; and his former job as a "swamper," or rigger, for a company that hauled drilling tools in the oil fields. According to Charlie, the swampers amused themselves late at night by leaping back and forth between the trailers as the rigs thundered along.

After dinner is Butch's time to catch up on paperwork at the motel and call his girlfriend, Kitt, back in Abilene. I ask Butch at one point how his romance is going, with him in this line of work. "She don't worry none about the towers," he says. "It's the part after work she's concerned about. So I tell her, 'Oh, those Lubbock gals, they don't want to get married. They just want the honeymoon.'"

I ask Charlie what his plans are. "Oh, I got my two daughters," he replies, "and I guess that's married enough."

When we meet in Ropesville the next morning, Charlie and Gerry go up the tower but return to the ground a few minutes later, shaking their heads. "It's howlin' up there," Charlie reports. Butch nods. "I seen how it was," he agrees. "No problem, Charlie. Don't you worry about it."

"It's not worth dyin' over," Charlie tells me later. "None of it is."

In late morning Butch keeps his crew occupied assembling clamps that will attach cables to the tower. The men shelter from the cold wind in the back of Paul's rental truck, swapping stories about Butch's dad, Virgil, who started the company in 1973, painting towers at a dollar a foot. Trained by the Army as a paratrooper, Virgil was no stranger to heights. Charlie recalls how Virgil once offered a job to an acquaintance: "So Virgil says to him, 'If you're afraid of dyin', I don't want you on my crew.' And the guy says, '[Bleep] you, Virgil! I don't want to [bleeping] work for you anyway.'"

The tumbleweeds roll on by, the wind never lets up and the sun sets on a tower that's no higher than it was the day before. "This job has really put me behind," Butch tells me. "But we got good customers—they understand; they'll wait till we're free."

It's a 20-minute hike to the top of a radio tower for routine maintenance; climbing the tallest towers, some 2,000 feet up, can take a couple of hours.

"Gol' dang," says Paul to no one in particular as the collision lights wink on that evening. "All we needed was 80 feet more." Gerry asks Butch if he can "sleep in" until 6:35 the next morning, a Sunday, and they all laugh raucously at the thought. It sounds like a good idea to me, but the crew is out on the Ropesville job at sunrise anyway.

The day warms and the tumbleweeds stay where they are. Another section goes up easily, but then Charlie runs into trouble attaching the guy wires' special fiberglass fitting to the tower. In a bit of unlicensed broadcasting, he bellows down a set of vivid curses to Butch describing the problem. I look over at the St. Francis de Assisi Catholic Church, a few hundred feet away to the south, and hope that they wait a bit longer before leaving the sanctuary, because Charlie's voice really carries. Butch sends up three shackles for the job, tying them to a rope for Charlie to heave up. But it doesn't work and a new round of epithets tumbles down, at one point inquiring whether Charlie should kick Butch's (bleep) now or later. Butch produces more shackles, and this time it works. The men prepare to drag the wires hanging from the tower out to the anchors, but pause to glance meaningfully at the guy wire and at me. Gerry says, "Well, you can't get a feel for it just by standin' around!" and I find myself grabbing gloves and joining in their tug-of-war against the sag of the heavy cable.

In midafternoon, Charlie finds Tom Crane in the transmitter building, puts on a long face and tells him, "Somethin's gone wrong!" This gets Tom's undivided attention. "What?"

"We've run outa tower!" and Charlie slaps him on the back. Though several days of antenna and electronics work remain, the most weather-sensitive part is over. The path is now clear to get the station on the air, well before the deadline. That evening, we gather at a pickup tailgate and watch the sun go down over Ropesville; Paul and Tom pour out 1988 Dom Perignon into plastic glasses to celebrate. We hoist our glasses to the tower, now standing half in shadow, half in light.

As the Ropesville job winds toward its conclusion, which requires fastening cables and antennas to the completed tower, I hear the men recounting various emergency jobs: when the hands have to turn out in the middle of the night to adjust an antenna twisted off-aim by high winds, or the time that Butch's dad once summoned every tower hand he could find to a bluff near Abilene, where an ice storm had brought the top 700 feet of a thousand-foot TV tower crashing down. Working night and day to clear away the wreckage and mount a temporary antenna on the stump, and bunking in the station's transmitter building, Virgil Strickland got KTXS back on the air just four hours before the Dallas Cowboys played the Pittsburgh Steelers in the Super Bowl.

So, some windy Sunday night after you turn off the TV, stop to think about this obscure, vertigo-inducing trade. While you're climbing the stairs, a tower hand somewhere is climbing a ladder into the darkness to go to work, as a mountaineer once phrased it, "high in the thin cold air."

Author James Chiles and photographer Layne Kennedy, both frequent contributors to SMITHSONIAN, *have covered other industrial risk-takers, including high-tech firefighters (May 1992) and oil drillers (March 1991).*

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THE Old North Trail

BY PETER STARK • THIS ANCIENT, SACRED HIGHWAY MAY HAVE CARRIED TRAVELERS FROM CANADA TO MEXICO

PHOTOGRAPHS BY TED WOOD

Montana's Chief Mountain, viewed from the eastern side of the Rockies, was one of the most sacred sites for the original people who walked the trail.

In a field along the trail, Curly Bear Wagner, a Blackfoot cultural leader, holds a rattle made of wood, bear hide, feathers, buffalo fur and turtle shell that he uses in ceremonial dances. He says his great-grandfather walked the trail from Montana to Mexico.

WE BROKE INTO A NEW RENDITION OF "FRERES JACQUES" each time we bushwhacked across another stream gully spilling from the purplish mountain wall. Amy and I hoped our off-key chorus would spook the grizzly bears that hung along the streamsides swatting boulders about in their search for grubs. We were anxious to chase the grizzlies off—that is, except for Molly, our 2-year-old daughter, whom I carried in a backpack and who rarely was shy about expressing her wants.

"Find bears!" she shouted in my ear. "Find bears!"

It was a warm day, at least by Montana standards, in early October, and the summer's last grasshoppers leaped in springing arcs out of the way of our swishing boots. An hour's walk across meadowy benches brought us to a small stream whose bank was scored by a grassy trough. It looked like the ford of an old road except it was too narrow and it cut straight up the embankment. Here were remnants of the Old North Trail.

"I want down!" Molly insisted.

We plucked a stalk of bunchgrass for her to play with in the backpack and started tracing the trough past a series of rock cairns. Molly quieted down and nodded toward sleep, and I finally was able to look around and let my imagination roam.

We seemed to be walking along an ocean shore, although we were nearly a thousand miles from the Pacific and twice that from the Atlantic. To the east, the view extended far out onto the hazy, tawny expanse of the Great Plains as if over a sea. Behind me, I felt the bulk of the Rocky Mountains, offering comfort, shelter, a place to hide, like enormous beach dunes at my back.

I reflected that this is precisely the route that I would have walked—with or without a 2-year-old—had I passed through 10,000 years ago.

Imagine a mountain ridge that snakes like a knobbly spine all the way from the frozen Canadian Arctic down to the deserts of Mexico. "The Backbone of the World," the Blackfoot Indians called what we know as the Rocky Mountains and the Continental Divide. On one side of this spine lies the Pacific Ocean, and on the other, the enormous grassy sea of the Great Plains. Now imagine a footpath that runs along the base of those mountains, following the "shoreline" between the mountains and the plains—twisting through stream gullies, unraveling over low ridges and around buttes—not merely for 10 or 20 or 100 miles, but running on and on for 2,000 or 3,000 miles.

For thousands of years, the inhabitants of North America trod along it—first on foot, then with dogs pulling cargo-laden travois, and finally with horses. Over the trail they carried trade goods—such as obsidian for spearheads and seashells from the coast—visited relatives in neighboring bands, set off on sacred missions or went to war with enemy tribes. Restless young men followed it alone for months at a time, driven to seek out a mate or satisfy a curiosity about new lands. The earliest humans who crossed from Asia may have walked this route when they migrated south to populate the Americas at least 15,000 years ago. This would make it the oldest and longest trail on the continent.

That's the legend of the Old North Trail. It has grabbed the imagination of a number of writers and historians over the years, not least of all mine. For several days last autumn I hiked

A cairn in the Pine Butte Swamp Preserve marked a site for trade, or perhaps a sacred place; archaeologists often date cairns by different lichens growing on the rocks.

sections of the trail with my family—our own little band—among grassy foothills near Choteau, Montana, and through the Nature Conservancy's nearby Pine Butte Swamp Preserve. You might say the Old North Trail is partly myth, partly theoretical speculation, partly oral history and partly archaeological reality. You can still follow its travois ruts and stone cairns through spectacular landscapes that look today much as they appeared to the Indians who camped and hunted and worshiped along the trail centuries ago, although the trail fades with each passing year and the prospect of oil and gas development hangs over the land.

"It's only by luck that this one is as intact as it is," says Brian Reeves, an archaeologist who has studied the trail extensively. "In most cases we put our wagon roads and highways on top of the same route. Lots of Indian trails back East were well known to the first Europeans. Those are now gone."

Early explorers' accounts mention Indian journeys of thousands of miles along the Old North Trail. This contradicts our popular notion that ancient peoples spent their entire lives within a few miles' radius of their camps. But some archaeologists now believe that in prehistoric times elaborate trail systems crisscrossed North America. "The way I look at these trails is that they all connected," says Milo McLeod, who has mapped Montana's Lolo Trail. "There were main trails the equivalent of Interstate 90, secondary trails, and tertiary trails like gravel roads. I'd say the Old North Trail would be classed as an Interstate."

Archaeologist Jim Keyser put it more simply still: "If you had a time machine that could take you back, in any prehistoric tribe you'd find a person who had seen both coasts."

The trail's most famous account was published in 1910 in Walter McClintock's book *The Old North Trail*. McClintock was a young Yale graduate who traveled West in the 1890s and signed on as a photographer with a government surveying party that rode through Montana's Northern Rockies. After completing the 1896 surveying season, McClintock accepted the invitation of the party's Blackfoot guide to travel to his homelands.

The Blackfeet had once controlled an enormous sweep of the Great Plains along the eastern front of the Rocky Mountains in today's Alberta and Montana. Renowned as fierce warriors and expert buffalo hunters, by the late 19th century they had been decimated by disease, encroaching settlers and the wholesale slaughter of their herds by white hunters.

McClintock arrived at the Blackfoot Reservation at Browning, Montana—a mere sliver of the tribe's former terri-

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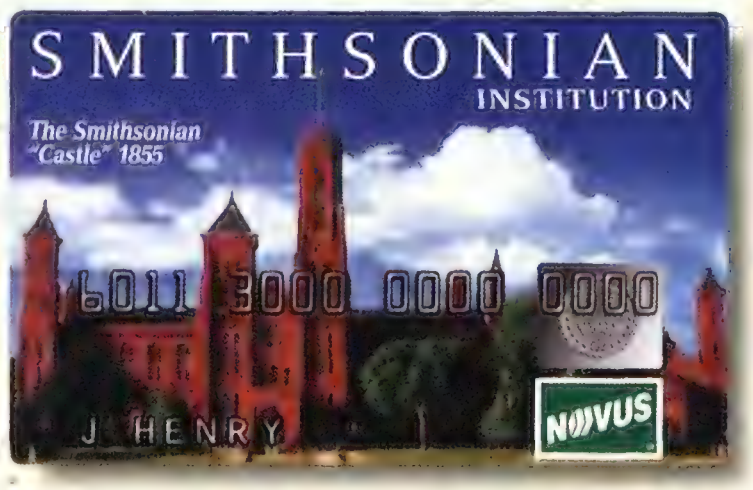

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tory—and was adopted by a tribal chief, Mad Wolf. McClintock spent three years with the tribe—photographing them, detailing religious ceremonies and capturing what he observed as a vanishing way of life.

Even then, the thoroughfare McClintock calls the Old North Trail had fallen into partial disuse as white settlements and ranches reconfigured travel patterns along the eastern slopes of the Rocky Mountains, known as the Front. Grass had sprouted in the old travois ruts, and fences cut across them. In McClintock's elegiac tribute to his adopted tribe, however, the vanishing trail becomes a metaphor for the former grandeur of the Blackfoot nation.

It is the spiritual leader Brings-Down-the-Sun who tells McClintock of the trail's significance: "My father told me it originated in the migration of a great tribe of Indians from the distant north to the south, and all the tribes have, ever since, continued to follow in their tracks."

Brings-Down-the-Sun pinpoints for McClintock landmarks along the trail: the Lone Tree along Oldman River, the fork at Calgary that leads far north into the Barren Lands, and the route down the Rocky Mountain Front to Mexico.

"My father once told me of a Blackfoot expedition that went south by the Old Trail. . . . It took them 12 moons of steady traveling to reach the country of the dark-skinned people, and 18 moons to come north again."

That journey would have probably occurred about the 1820s; nor was it the only recorded expedition to the south. As early as 1787 the explorer David Thompson heard of a Blackfoot raid on a party of Spaniards, some 1,500 miles south of the tribe's home camp in Alberta, and in 1854 James Doty described a Blackfoot party that ten years earlier had followed the Rockies down to the "Mexican Towns" between Taos and Santa Fe.

"The party committed no depredations in that country," wrote Doty, "and indeed were traveling more for the pleasure and to see the world than with a view to war."

"It took them 12 moons of steady traveling to reach the country of the dark-skinned people."

EARLY ONE BLUSTERY FALL MORNING I drove Montana Highway 89 north toward Browning. The highway parallels the Rocky Mountain Front about 20 miles out on the Plains, connecting small ranch settlements along the route that Reeves calls the Outer Trail. The car lifted and dropped over the rolling prairie while V's of geese winged south, following, like the trail, the eastern slope of the Rockies. Five men on horseback herded cattle beside the road; out on the grasslands I saw the hammer-like pendulum of a pumping oil well and the chain-link fence of an underground missile silo—the icons of our age.

Blackfoot artifacts hung from the walls of Curly Bear Wagner's apartment in Browning, a small, windy town that stands alone on the prairie. Curly Bear is an expert on Blackfoot culture, and as he poured steaming mugs of tea on this cold autumn morning and sat across the kitchen table from me, he described the journey his great-grandfather, Chief Red Crow, made to Mexico.

"Did he ride?" I asked.

"Hell, he walked," he answered. "Their route was along the Front. Down on the Plains it was just too much wind, weather. But along the Front he had shelter, wood, water, game."

Evidence of the trail's early travelers lies scattered all along the Front. Ruts in the ground show where travois poles dragged in the earth. Pulled by canines during what Curly Bear called the "dog days" and by horses after Europeans brought them to the continent, these carriers bore tipi covers and other belongings. Curly Bear estimated that before horses, warriors traveling alone could make 20 or 30 miles a day, while bands or families traveling together might cover 5 to 7 miles, moving for three or four days at a time before setting up camp for longer stays. There are still "tipi rings"—stone circles about 10 to 30 feet across that weighted down the edges of the tipi covers—embedded in the prairie grasses.

"Of course they had to have a source of food," Curly Bear explained, "so they hunted buffalo as they went."

He described the hunt: two boys were chosen as "buffalo runners," or decoys, and underwent a purification ceremony at dawn in a sweat lodge

Archaeologist Brian Reeves tracks the route of the Old North Trail. Solid line indicates a path based on evidence; dotted lines mark trail routes based on speculation.

JAMES LAISH

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made of 12 woven willow branches covered by buffalo hides; it was steam-heated by water splashed over hot rocks. They prayed and smoked a pipe, its bowl made of stone to represent the earth, its stem made of wood to signify living things, with its smoke rising as a prayer to the Great Spirit.

"We believe everything is alive—the rocks, the trees, the water, the clouds, the sun, the stars—and as human beings we're part of that relationship," said Curly Bear. "Because it was very sacred to hunt buffalo, we called on the Creator to help us. The buffalo was our staff of life, our survival."

One of the two boys donned a calf's hide and moved out in front of the buffalo herd, bawling as if injured to lure the cows forward. The other boy, wearing a wolf skin, feigned an attack at the rear of the herd to draw the attention of the bulls. Meanwhile, other hunters moved close enough to allow the cows to catch human scent, triggering a stampede. Still others, hidden behind cairns, jumped out waving deerskins. This frightened the herd down "drive lanes," or alleys formed of cairns and topped by feathers or branches that wafted in the draft of the passing stampede, spooking the buffalo onward. The lanes ended at the lip of a cliff or embankment known as a *pishkun*, or buffalo jump. The bawling, stampeding animals cascaded over the edge and tumbled to their deaths.

The people had to work quickly to butcher all the meat before it spoiled. One man with four helpers could skin and quarter 9 to 12 buffalo a day. The women hung out strips of meat on poles to dry, and scraped and tanned the hides with mixtures of brain and intestines. "They cooked the boshribs—the buffalo's hump—right on the spot," said Curly Bear. "You can still see the pits where they cooked."

Another day, Molly, Amy and I spotted a set of buffalo drive lanes near Pine Butte Swamp as we traced a segment of the Old North Trail. Stone cairns, like piles of bleached bones, were dotted along a low, undulating ridgetop. I imagined pounding hooves and clouds of dust, as the herd stampeded across the prairie toward this ridge, and the hunters suddenly popping from behind the cairns waving deerskins, forcing the bellowing mass to swerve toward a pishkun we'd been told lay some two miles distant.

"I believe that these features re-create in stone the stories of the creation of the Blackfoot world."

Walter McClintock photographed this Blackfoot camp for his 1910 book.

Near the trail, we also found a "power rock"—a large black boulder that sat alone. I bent down and saw that under one edge someone had tucked a few coins. The Blackfeet make offerings and pray where they find unique landscape features, Curly Bear had explained. Their most sacred mountains—Chief Mountain, Heart Butte Mountain, Ear Mountain—stand distinctly apart from the Front as if lifted from the jumbled range and slid toward the Plains by some enormous hand. "We believe the spirits are very active in these areas," said Curly Bear.

Stone shelters mark places where individual Blackfeet held vision quests. Other structures along the trail remain mysterious, such as the tightly spaced rows of cairns at stream crossings and a giant stone oval inscribed on a hillside. Curly Bear believes these may have been built by other tribes passing through during the dog days. "You have to sit down and look at the terrain," he said. "The elders tell me that if you don't know what something is when you're doing archaeology work, leave tobacco and sit for a while and it will come to you." One structure he knows well is the stone figure of Napi, or Old Man, on a slope near the trail. According to legend, Old Man walked from south to north, creating the Blackfoot world—mountains and plains, birds and animals.

"It's my opinion that Wyoming and Montana were powerful places a long time ago, during the dog day period," said Curly Bear. "There were spiritual gatherings, and people from different bands would travel the Old North Trail to meet and pass on knowledge."

BRIAN REEVES HAS DONE SOMEthing close to what the elders suggest. A fourth-generation Albertan, Reeves grew up near the Rocky Mountain Front in Waterton Park and has spent the past 30 years studying the archaeology of the Native peoples of the Rockies and High Plains. Lately he has climbed some two dozen peaks in Waterton and Glacier parks looking for remains of ancient vision-quest sites.

A few years ago, the Montana Historic Preservation Office funded an archaeological survey of the Old North Trail's Montana section, hoping to nominate it to the National Register of Historic Places. Reeves jumped at the chance to head the survey.

His research led him to ranchers and Blackfoot elders, and sent him combing through archives and maps, and aerial photographs. "On photos I could see trail marks that show up as linear features," he said. "Then I compared them to known roads and fences—if they go through fences, they predate the fencing of the land. At major river crossings the lines converge."

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The old trail likely ran beyond Two Medicine Lake on an elevated ridge through Glacier National Park, on the eastern side of the Rockies (background).

Reeves then flew the trail twice—first in a small plane and then, for closer inspection, in a helicopter. From the air, he noted irregularities in vegetation patterns—a stripe of young aspens filling in the old trail corridor, or age differences in a stand of limber pine.

He selected three stretches of the trail for nomination, conducting a close inspection on the ground. "I saw ruts—old overgrown indentations. Then I determined if they were wagon ruts, dog travois, horse travois." One clue was that travois couldn't easily cross a slope horizontally because their poles would slip downhill, so travois tracks tend to muscle straight up a rise instead of angling across it. The bouncing of travois poles also made squiggly lines, in contrast to the straight tracks of wagon wheels. Reeves defined the trail as an interwoven set of trails that lies within a 15-mile-wide corridor paralleling the mountains.

After examining stone structures that lie within the corridor, Reeves believes the trail served a specific spiritual function: the retracing of Napi's route. "I believe that these features re-create in stone the stories of the creation of the Blackfoot world," he said. "You're looking at symbolism laid out."

The legend of Napi's walk may echo actual events that happened thousands of years ago. Reeves subscribes to the theory that humans came to North America long before the last ice age ended some 15,000 years ago. As the final ice sheets receded, plants and animals, and eventually humans, reestablished themselves from the warm south to the icy north. "The Napi story speaks to that—it speaks about people coming back from the south."

Reeves cautions that this spiritual account of the trail is "strictly interpretive." More practically, the trail was used for travel, warfare, trading and to visit relatives: as late as the 1930s, Blackfeet in Montana were following it north to visit relatives in Canada. One of the trail's most important functions, Reeves said, was as a route for carrying obsidian and chert from quarries in Wyoming and Montana to Canada, where they were worked into weapons and tools. Having dated caches of these stones along with spearheads and other evidence, Reeves believes humans have traveled the trail for 10,000 years. Not everyone agrees.

"How does anyone know we're dealing with a prehistoric trail?" University of Montana archaeologist Tom Foor asks rhetorically. "There may be some prehistoric sites, but there's no way to carbon-date the tread of a trail."

According to Foor, the problems in dating and interpreting the Old North Trail are common to trails in general. "One of the difficulties is that our search focuses on the sites rather than the connecting links," says Keith Thurlkill, historic trail coordinator for the U.S. Forest Service.

Each traveler literally stomps over the evidence left by earlier travelers, making it difficult to sort one use from the next. Trails shift over time, split and rejoin, as travelers walk around a fallen tree or find an easier pass

At this prehistoric buffalo jump at Montana's Ulm Pishkun State Park, herds were once driven off the bluff (left), tumbling to their deaths on rocks below to provide meat.

through the mountains. Instead of a single path, says Thurlkill, who has also worked on the Oregon Trail, and the Lewis and Clark Trail, a trail may eventually look like "spaghetti."

Not only do traces of a mountain-front trail appear in Montana and southern Canada, but old Indian trails were known to have run along Colorado's Front Range, where that state's mountains rise from the Plains and the cities of Boulder, Denver and Colorado Springs now sit. Many of these trail segments may have simply served hunters—local commuters, so to speak, instead of long-haul travelers. But all over North America, new archaeological evidence suggests that prehistoric peoples communicated—or at least traded—much more widely than we might guess. Tooth-shaped dentalium shells from the Pacific Coast are unearthed in the Great Plains. An Anasazi figure shows up on a rock wall in Canada. In one of the most famous examples of prehistoric trade, vast amounts of obsidian (a glassy black volcanic rock) quarried in what is today Yellowstone National Park were recovered from the 2,000-year-old burial mound of a Hopewell chieftain along the Ohio River.

We'll never know just how extensive a system of trails existed in prehistoric times. "The truth is people have walked everywhere," says Thurlkill.

When European explorers first pushed to the interior of this continent, they didn't slash their way through virgin forests with axes; they followed waterways or Indian trails. While completing much of their expedition by boat on the Upper Missouri River, Lewis and Clark traversed Montana's forbidding Bitterroot Range on the Lolo Trail. "We have now fallen on a great road," they recorded in their journals.

The prehistoric trails of North America may have once joined into the elaborate trail and road systems of Mesoamerican cultures. "Who knows, your trail that runs along the front of the Rockies might originally have hooked up with what became the Camino Real," said University of Colorado archaeologist Stephen Lekson, referring to the ancient trail that ran north from the heart of Mexico (SMITHSONIAN, November 1995). "That's not to say the Toltecs and Aztecs walked up to Montana, but probably there were sets of trails linking Missoula to Mexico City."

ONE NIGHT I LEFT AMY AND MOLLY in the warm, yellow glow of the cabin. It was a cloudy, moonless night, and the inky blackness seemed to flow from the mountain canyons onto the plains. I drove a gravel road to a section of the Old North Trail that runs through the Pine Butte Swamp Preserve, turned on my headlamp and walked a low, grassy ridge until I struck a large cairn that marked a notch.

I turned off the headlamp. The mercury pinprick of a single ranch light shone far to the south, and to the east an orange glow probably marked Choteau. But to the north and west lay nothing but the blackness of the prairie and the deeper blackness of the backbone of the world—this spine of mountains stretching from the Arctic to Tierra del Fuego. Beside the cairn in darkness, I stood on a continent alone.

Through this very notch may have walked some of the earliest humans to enter North America. The Old North Trail sits squarely along what's known to archaeologists as the Ice Free Corri-

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dor. Those who crossed from Asia on the Bering Land Bridge and populated North America at least 15,000 years ago, perhaps much earlier, would presumably have been blocked by the glaciers of the last ice age during their movement south from the Arctic.

But geological evidence indicates a narrow, ice-free passage remained open along the eastern slope of the Rockies. It was 10 to 50 miles wide and about a thousand miles long, stretching from the Yukon down to the present U.S.-Canadian border. One theory holds that those first Americans may have traveled down the Ice Free Corridor to the area where the Old North Trail now runs. While no one suggests these people made the trail's cairns and ruts, the possibility that they followed this general route means the Old North Trail carried the weight of one of the most significant human migrations of all time.

"I don't think they packed their bags one day and said 'Let's move south,'" says anthropologist Dennis Stanford of the Smithsonian's National Museum of Natural History. Stanford believes the migrations occurred gradually via both the Pacific Coast and various interior routes. "But we continually short-shrift these people," he says. "They were very sophisticated."

Eskimos illustrate how widely and knowledgeably early North Americans may have traveled, Stanford suggests. Eskimos have been known to cover thousands of miles, and prehistoric cairns mark their travel routes all over the Arctic. Even today Eskimos show travelers the way by setting out 55-gallon oil drums.

Stanford believes that early travelers knew how to navigate by stars and by landmarks. For instance, those who occupied what is now Texas could have explained how to get to Montana by following north along a series of prominent peaks and mesas.

Each passing year erases the Old North Trail a little further from memory while weather erodes the grooves it etched across the land. The effort to nominate segments of the trail to the National Register of Historic Places is on hold, lacking the funds to finish. Reeves, meanwhile, hopes to organize intertribal research on the trail all along its route.

The trail carried the weight of one of the most significant human migrations of all time.

Author Peter Stark, with daughter Molly and wife Amy, hikes along the trail.

Besides time and weather, another threat to the trail is the prospect of oil and gas development on its perimeter. Several wells have already been drilled on lands along Montana's Rocky Mountain Front, and the U.S. Forest Service is considering granting oil and gas leases on its extensive public holdings, which begin a few miles west of the trail. Many Blackfeet are protesting development on what they consider to be sacred land. "It's our duty to take care that no damage comes to those mountains," said Curly Bear.

On a Sunday afternoon Amy, Molly and I finished a picnic beside a ranch road, hiked across a cow pasture, scattering a bunch of fat Herefords, and sweated up a ridge. Leaving Amy on top, I carried Molly in the backpack and stumbled down a darker stripe of vegetation on the ridge's far side and traced it across a broad, flat meadow toward a wooded stream canyon.

In a lifetime of searching for good campsites, this looked to me like a nearly perfect one—sheltered by a low ridge, looking up at the great escarpment of Ear Mountain, with an abundant source of wood and water down in the nearby canyon. I walked between closely spaced cairns that marked the trail. Among the sparse meadow grasses beyond I could detect the faint outlines of stone tipi rings. I imagined dozens of tipis in a giant circle, dogs barking, children running, smoke rising from the tipis toward the sacred cliffs of Ear Mountain.

I walked down into Deep Creek's canyon and sat beside the stream that riffled over gravel bars, past grassy patches and cottonwood groves, and watched while Molly threw stones into the pools. I wondered how many generations of travelers had crossed this creek, the small children of the ancient bands toddling among the rocks. The stream, like the trail, constantly moved and changed course, whispering the promise of far-off places. As with the stream, it was impossible to say, really, just where the trail began in time or place, or where it ended.

A gust of October wind plucked clouds of yellow leaves off the cottonwood trees, and Deep Creek swept them away. Molly plunked the last of her stones into the water and said she was ready to go back to her mama.

Writer Peter Stark and photographer Ted Wood live in the Rockies, and both are drawn by the ancient peoples and dramatic geography of the mountain front.

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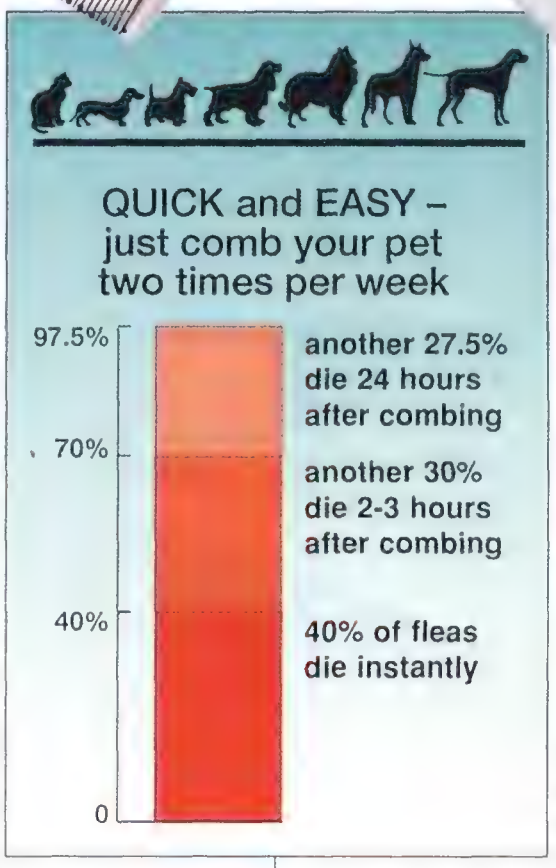
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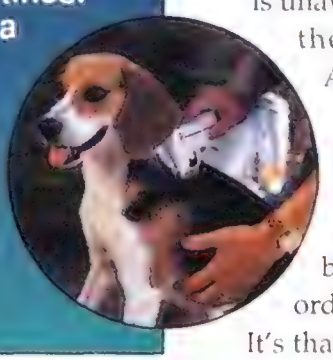

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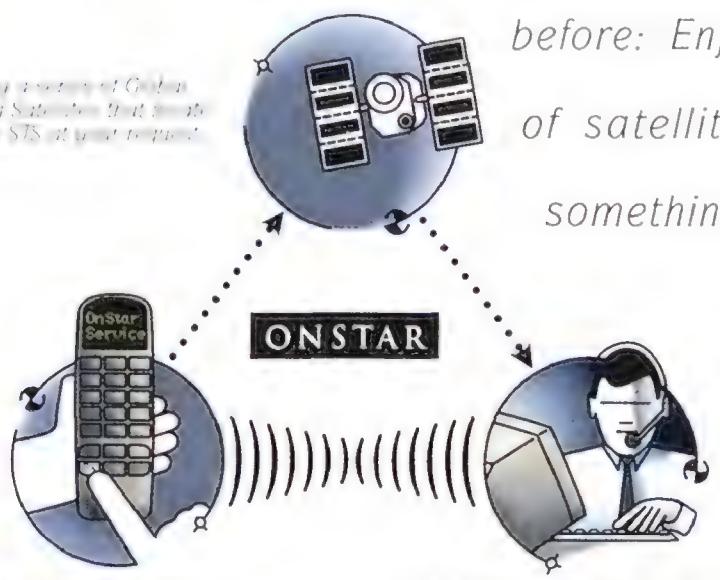

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Mysterious Pearls

These rare pearls (opposite) come not from oysters but from the Melo *melo*, a large snail, or gastropod, with an orange shell (above). They may have belonged to the last emperor of Vietnam, Bao Dai (top), who ascended to the throne in 1932, when he was just 18.

Did they once belong to Vietnam's royal family? Perhaps. But for Ben Zucker, a mystical "sleuth" of the gems trade, seeking the answer matters more than finding it.

BY JAMES TRAUB

ONE AFTERNOON IN 1993, BENJAMIN Zucker, jeweler, collector and connoisseur, was sitting in his office on Fifth Avenue and 47th Street in Manhattan when he received a phone call from a Swiss gems dealer. "I'd like to show you something very interesting," the dealer said. "Would you be free some time today?"

The dealer, whom Ben Zucker had known for years, was not the kind of man who normally called from pay phones and invited himself upstairs. "In five minutes, he appeared," Zucker says. "And he just very languidly opened up this box. Inside there were 23 pearls. And because they were so large, and because they were such an intense color, I said to myself, 'This can't be happening; they can't be genuine.'" The pearls were a brilliant orange color, and the largest among them was 32 millimeters—bigger than a robin's egg. Zucker had never seen an orange pearl of any kind, and he felt sure that *The Book of the Pearl*, an epic reference work first published in 1908, made no mention of such a collection.

"At the risk of sounding pretentious," Zucker says, "I always had this dream of having the greatest diamond in the world, the greatest emerald, the greatest sapphire, the greatest ruby—kind of a *musée imaginaire*. It had happened to me with an emerald and a sapphire, but it had not happened with a pearl. I always thought that if I could get a necklace of, let's say, pink pearls, this would be unbelievable. But these were so rare that they were not even drilled."

Ben looks into his wineglass, which he has not touched. We are sitting in the Harvard Club, where he looks perfectly plausible, if not exactly exemplary. He wears gray suits, but the pants cuffs always seem to scrape on the floor. He has a soft, pudgy face and a soft voice, and a kid's delighted giggle. Ben is so gentle, and so unworldly, his friends sometimes wonder how he's

PHOTOGRAPHS BY MICHAEL FREEMAN

TOP: SYGMA

managed to be so successful in a business as cutthroat as the gems trade; but the strange truth is that Ben has managed to obtain almost all of the many things he's fallen in love with over the years, whether women or gems.

"Having seen these kinds of treasures," Ben goes on, "and then getting the pearls, I said, kind of diffidently, 'Are these natural?' He said, '*Oui*.' I said, 'But how can it be? Have you ever seen or even handled such pearls?'" The Swiss gentleman admitted that he, too, had never before seen orange pearls. All he could say was that the pearls had been purchased in Vietnam and that they were said to have come from the royal treasury. Vietnamese royalty! Ben was a goner. He asked if he might be able to purchase a share in the pearls. Not at this time, said the dealer. But would he be interested in conducting research on the collection to help determine its provenance, a skill for which he was so well known? Ben has described himself as the "Sherlock Holmes of the gems trade." He has a gift—a combination of doggedness and the conceptual leap—for tracing gems and jewels to, or at least near, their origins. And so he immediately agreed.

As soon as the Swiss dealer left, Ben brought his precious cargo to the Gemological Institute of America, which happened to be located just around the corner. Kenneth Scarratt, an old friend and one of the directors of research, took one look at the pearls and said, "They're from Vietnam." He had seen one such pearl several years ago and had traced it to a shell found in Vietnamese waters. Scarratt reported that only four orange pearls had ever been recorded, all in the past 30 years. He was absolutely staggered to see a collection of 23 such pearls, in magnificent condition. Ben left the box with Scarratt for a technical workup and prepared to learn everything he could about pearls and Vietnam.

Jewelry runs on both sides of Ben's family, though more strongly on the maternal branch. His mother's father, besides being a prominent rabbi in Antwerp, was, Ben says, the city's greatest diamond cutter. All four of the rabbi's sons went into the diamond trade; one of them, Aaron Gutwirth, established the family's interests in the Far East and became known to Ben as a grandee quartered in a vast home in Singapore—a cross between Indiana Jones and Sidney Greenstreet. He would send letters from exotic locales, and Ben and his mother would float off the stamps in the tub. Twice a year, he would materialize at the Zucker apartment on the Upper West Side. "When I was 7," says Ben, "Uncle Aaron was sitting at the table and he reached into his pocket and pulled out an envelope, and there was this enormous white pebble, and he said to me, 'What do you think this is?' and before I could say anything, he said, 'This is a very rare diamond crystal.'" The sparkle got in Ben's eye, and never left.

Ben's father, Charles, was, he says, "the world's foremost expert on exotic feathers"; when women stopped wearing feathered hats, he expanded into silk flowers. When Ben was in college, his father, as a favor to a friend, bought some pearls in Japan; within a few years, he had shifted into the gems business, though not on the scale of the world-girdling Gutwirths. Ben himself was a Yale graduate who enrolled in Harvard law school because, he claims, a girl he had fallen hopelessly in love with was going to be in Cambridge that year. After graduating, he humored his father by buying stones in India while he prepared to dazzle the world with his first novel. But as he sat on those dirty mats sorting through emeralds, he began to feel the spirit of Uncle Aaron moving in him. He started to collect Judaica, beginning with wedding contracts and moving on to wedding rings. Then he started systematically buying medieval and Renaissance rings, and then Islamic rings. In his late 20s, Ben joined his father's business, where he now makes what appears to be an extremely comfortable living selling antique jewelry and purchasing gemstones for use in contemporary settings.

Still, the dealing is an excuse for the collecting. Diana Scarisbrick, an English jewelry historian, calls Ben "the most important collector of antique rings in the United States." When De Beers, the diamond company, put together an exhibition on the history of the wedding ring, most of the objects it used, including a Roman diamond ring from the third century, came from Ben's collection. His are odd, idiosyncratic collections—a testimony to the old-fashioned idea of connoisseurship. And yet

A jewelry historian calls Ben "the most important collector of antique rings in the United States."

Using a jeweler's loupe, Zucker examines a cameo portrait of George Washington carved in agate. Opposite: a sampling of Zucker's noted ring collection.

Zucker's royal blue sapphire from Burma is a dream come true. He always yearned for an "extraordinary" sapphire, which at 202 karats, this gem assuredly is.

even the collections are an excuse for something else—an ongoing intellectual project that involves writing, researching, the making of strange connections and the triggering of little epiphanies.

Ben's greatest discoveries have a slightly occult quality to them. One night in the late 1980s, while under the influence of brandy and cigars, he concocted a screenplay, or rather a fragment of fantasy, in which a character played by Meryl Streep brings a carved Mughal emerald to a lecturer—a transparent version of Ben, who was between marriages at the time—and the two of them flee Iranian agents, fall in love and end up on the beach at Goa.

"Two weeks to the day after that," Ben says, "in walks a dealer to my office, hands me this emerald and says, 'What is this?' At which point I thought I was going to faint, because I realized that this was an extraordinary treasure." It was, of course, the carved Mughal emerald of his daydreams. Christie's, the dealer said, had already passed on it, but Ben was undeterred. After reading hundreds of books on Mughal gems and iconography, and closely studying every other acknowledged Mughal emerald extant, he concluded that the stone had belonged to Shah-Jahan, builder of the Taj Mahal, and that the intricate series of linked circles represented a genealogical image tracing the emperor's origins to the great conqueror Timur.

This was an incredibly audacious leap, even by Ben's standards. And yet the emerald is prominently on display in an exhibition of objects associated with Shah-Jahan that will be at the Smithsonian's Arthur M. Sackler Gallery through next February. Milo Beach, the director of the Sackler and a highly regarded scholar of Mughal art, says that Ben "knows this material better than anyone" and that the piece is "so in character with Shah-Jahan," who was himself a renowned jeweler, that he is inclined to accept Ben's theory that the piece belonged to the emperor and held a special place for him.

By the time I met Ben, early last year, he had been contemplating the orange pearls, or the idea of the orange pearls, for quite a while. Ben knew they were old, because Ken Scarratt had found a pattern of minute wear marks, which came, he said, from frequent handling over a great period of time—perhaps hundreds of years. He had read up on the iconography of Vietnamese royal objects, especially in the splendid porcelain known as *bleu de Hué*, after the country's imperial city. Many of these pieces featured a pearl with a flaming tail, often pursued by a dragon, the symbol of the emperor. In a draft chapter for a projected book, Ben hazarded that "this fieriness is a physical description of the very essence of the *Melo* natural pearl: namely its glorious flame-like surface." The fact that no serious student of Vietnamese art had ever proposed this theory before only proved to Ben that none of them had ever seen the orange pearls themselves.

The Swiss dealer agreed to send the pearls back to New York for a brief viewing. I went to Ben's office, which consists of a network of tiny rooms connected by the kind of doors you normally see in high-security prisons. Ben buzzed me in to his office. On his desk was a rectangular crocodile-skin box. "Are you ready?" Ben said. He opened the box and inside, arrayed in six lines like the spokes of a wheel, were the 23 pearls, with a brass plate beneath them reading, "The Royal Collection of Natural Pearls." Each pearl was nestling in its own custom-made cavity. They didn't look like pearls at all. They were strange, marvelous objects, like eggs or marbles. They almost seemed to carry the charge of the sacred. At first I was afraid to touch them, but Ben plucked one up as if it were a grape and said, "Hold it in your hand. It seems to have an internal life to it. If you hold it like this"—he turned a pearl toward the light—"the thing seems on fire." They were beautiful to the touch—smooth and sleek, and as solid as shot. And it was true that if you examined one of the pearls closely, you could see a whole world of lemony freckles and brownish ribbons swimming beneath the gleaming surface like so many

The intricately carved "Taj Mahal" emerald, another Zucker treasure, is at the Smithsonian in an exhibition of objects associated with the Mughal emperor Shah-Jahan.

sunspots. Ben also wrote, "That the Vietnamese emperors would have treasured these intense yellow to orange pearls is immediately understood and felt by anyone who has had the privilege of viewing [them]." I understood; I agreed to go with Ben to Vietnam to pursue the mystery of the fiery pearls.

HALF THE REASON BEN WANTED TO study the pearls was the chance it offered to travel to Vietnam (SMITHSONIAN, January 1996). I felt the same way. For me, as for most Americans, Vietnam is the name of a war, not a place. It is, it turns out, strangely liberating to go there. The Vietnamese do not talk about the war, and they treat Americans with an almost unsettling lack of bitterness. We arrived a few days before Tet—the lunar New Year—and the streets were lined with people selling apricot blossoms and kumquat bushes. But underneath the folkloric charm, what one notices is desperate poverty. Decades of war followed by an economic embargo have taken their toll. One can drive for hours through flat rice paddies without seeing so much as a pump. Hanoi, where we first landed, is a strange reminder of the palmy era of French colonialism. The broad, shaded boulevards are lined on both sides by fine, ocher-colored villas with green shutters. The streets are choked with bicycles, not cars.

Ben and I, accompanied by his friend and partner Derek J. Content, a dealer and scholar whose store of recondite information exceeds Ben's, paid a visit to a noted archaeologist in Hanoi named Tran Quoc Vuong, a small, bent man with flyaway hair, a sly grin and a few rotting teeth. Vuong lived in a tiny, airless warren of rooms lined with books. When we had been properly seated, Ben thanked him with his usual courtly show of effusiveness and then explained that we wished to ask him about pearls. Vuong nodded, and smiled vaguely. He was not familiar with the word. "*Perles*," Ben said helpfully. "*Nous voudrions comprendre . . .*" Another blank smile. It was not an auspicious beginning. Finally, Ben wrote the word, and Vuong said, "Ah, *pearl*."

Of course, he knew all about pearls. He began speaking of the symbolism of the pearl, of the classic Vietnamese image of the dragon chasing the pearl, of pearls found in digs in southern Vietnam. "Pearls in the earth?" said Derek. It turned out that Vuong was describing jade beads. There had been a misunderstanding; *liu li*, the Chinese term Vuong used for "pearl," covered all round precious objects—even beads. This provided an opportunity for the kind of philological disquisition that Ben and Derek found fascinating. Vuong went to his warped bookshelves and pulled out crumbling books, each lovingly wrapped in crinkly paper. He drew the relevant Chinese characters with great delicacy. Ben leaned forward, an encouraging smile fixed on his face. "Have you ever heard of orange pearls?" he asked. Vuong looked at him blankly; he had not.

From Hanoi, we drove out to Halong Bay, a fishing village along the South China Sea. Ben had what seemed to me an occult faith that we would discover something important in this resort town, which he had learned of through an article in a travel magazine. As we approached the coast, he said, "Have you noticed how the houses are turning orange?" Surely a revelation was at hand. And indeed, that evening, as we were exploring the houseboat where we would spend the night, Ben appeared on the stern to announce, Holmes-like, "We've made a break in the case." Ken Scarratt had given us a specimen of the lovely orange volute shell *Melo melo*, from which he believed the pearls had come. The *Melo melo* is not an oyster but a large snail, or gastropod, found in the waters of Southeast Asia. Ben had shown the houseboat's cook his shell, and she had immediately pointed him to an ashtray—the *Melo melo*!

We asked our translator to tell the captain that we wanted to meet fishermen who could tell us about the shell. The next morning, as we emerged for breakfast, a line of fishing boats with bamboo masts and rattan roofs stretched from our prow. In the first boat in line, a boy stood on deck,

Gemologist Ken Scarratt holds up a spectacular orange pearl found last fall in the waters south of Phuket, Thailand. The 232-karat prize was in the shell on the table.

blowing a conch for our benefit. It was the wrong kind of shell, but the fishermen immediately recognized our shell, which they called *kulon*. Sometimes it came up with their nets, but they had never known a kulon to hold a pearl. We motored out into the harbor, talked to more fishermen and heard the same story.

Then a fisherman in a sort of dugout drifted up and made fast to our boat. "I have six pearls from the orange shell," he said. "Would you like to see them?" He sailed away and came back ten minutes later with a tiny plastic case. Inside, packed amid grains of rice, were six tiny pebbles. Four of them were white and nacreous. The other two were larger and coarser; one had a slightly orange cast, and the other was bright orange. The fisherman, Nguyen Van Huong, obviously considered them rare treasures. His brother, he said, had made a hobby of trying to find pearls from the kulon; it had taken him a hundred shells to find these specimens, which came from a single shell he had fished up in an area 15 hours away by sail. If it had taken so much work to find six trifling pearls, it was scarcely possible to imagine the effort required to assemble a collection of 23 enormous, brilliant, flawless pearls. In a country like Vietnam, where wealth and power were concentrated for generations in the hands of the emperor, there could be no one else with the wherewithal to acquire such a magnificent ensemble.

Our next stop was Hué, known to Americans as the site of some of the fiercest fighting of the 1968 Tet offensive. For the Vietnamese, however, Hué is the Imperial City, established by the first emperor of the Nguyen Dynasty in the early 19th century. Ben believed that the pearls had been collected during the 18th-century Le Dynasty, and then had passed, along with the rest of the royal treasury, to the Nguyen. The last of the emperors, Bao Dai, had been a puppet, first of the French and then, during World War II, of the Japanese. He had left the country in 1946 and had returned in 1949 to rule again under the French, but still he hoped to negotiate his country's independence. Instead, Vietnam was partitioned in the 1954 Geneva Conference, which led ultimately to the Vietnam War. By then, Bao Dai had again left Vietnam. Ben believed that the pearls had been lost or sold or stolen in the chaos of the war years and the postwar period. Bao Dai, incredibly, was still alive and living in Paris; I had written him a letter in comically high-flown French, asking if he knew of the pearls. There had been no response.

There were still people in Hué who had been part of the royal retinue. In a faded villa that had once belonged to Bao Dai's mother, we met Pham Van Thiet, a musician who had been taken into the royal court in 1937, when he was 12. He was a cadaverous gentleman with long, bony fingers. He wore a black *ao dai*—the printed silk jacket that had been the uniform of the court—and he sat up very straight, and smoked very slowly, as he spoke. Thiet's sitting room had two fine carved benches inlaid with mother-of-pearl, but the walls were mildewed and decorated with old calendars. The foyer was full of splayed furniture and mottled photographs of the royal family. With one skeletal hand folded over another, Thiet spoke of Bao Dai as an idler who spent his days playing tennis and cards. "He was a playboy," he said, "but he was also a simple man" who would join a peasant family for a cup of tea. He had taken little interest in the splendid objects that he had inherited, preferring French things instead. Ben showed Thiet a picture of the orange pearls. He looked up with his rheumy eyes and said, "I have never seen these objects."

And so it was everywhere in Hué; the curators and archaeologists we spoke with told us a great deal about the iconography of the dragon and the pearl, and the centrality of the pearl in Vietnamese history, and the vicissitudes of the royal treasure, and the negligence of Bao Dai; but none of them had heard of the orange pearls. Our final hope lay in Ho Chi Minh City, almost always still called Saigon, where we were to meet with Nguyen Trung Son, an antiques collector and scholar and perhaps the country's leading expert on royal objects.

Son turned out to be a very unusual person. In a country that seemed to have been stripped to its bare essen-

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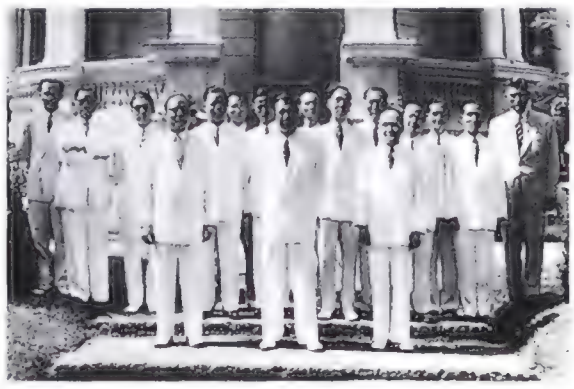
tials, he lived surrounded by beautiful objects, including a large collection of *bleu de Hué*. And like the other antiquarians we had met, he cherished the imperial past as a golden age for Vietnam, a time before the compromises and humiliations of the colonial era. He was, himself, a remnant of that tradition. His great-grandfather had been Minister of Justice under Bao Dai's predecessor; he had quit, Son explained, rather than collaborate with the French. His granduncle had married into the royal family. Son's wife was also from Hué, and the couple now operated a Hué-style restaurant. She prepared an eight-course lunch, which was itself a reminder of Vietnam's tradition of aristocratic refinement.

Son knew things that no one else we had spoken with knew. He explained, for example, that each palace in the Imperial City had been used to store specific treasures; each had its own inventory, though they had never been systematically studied, and were now stored in an archive in Hanoi. "The most precious objects," Son said, "were kept in the Can Chanh," a palace that no longer exists. "It also was used for tribute objects, such as a jade chessboard, and very, very big pearls." Ben and I exchanged a furtive look. When Bao Dai had abdicated in favor of Ho Chi Minh in 1945, Son went on, the new rulers had taken the gold seal of office, a ceremonial sword and the chessboard. "Nobody knows what happened to the other objects," he said. "They could have been kept by the new government, or they could have been stolen."

Son began ranging deeper into the past. In ancient times, he said, "Burma was famous for jade, Thailand was famous for the ruby and Vietnam was famous for the pearl." And the most fertile site for pearls in Vietnam was Halong Bay. "Many, many people were assigned to dive for pearls, also to look for the other tribute objects, such as ivory and sandalwood. And it was considered mandatory to bring any fine specimen to the emperor." Around 1780, Emperor Le Chieu Thong sent to China "two pearls as big as eggs." Ben, who until now had been listening so respectfully that he had stopped eating whenever he had seen Son set down his fork, blurted out,"What color were they?" Son answered at great length. Finally, our translator said, "It was not written; I don't know."

"The emperor has never heard of these pearls; thus, he says, they do not come from the royal family."



Bao Dai, front and center, posed in 1954 with officials of his last government.

As the meal came to an end, Ben brought out the blue notebook that had the pictures and slides of the fiery pearls, and said to our translator, "Has Mr. Son ever seen a pearl such as this?" Son held a slide up to the light with a look of utter perplexity. He shook his head and said, "I have never seen any pearl of this color." Some day, he said, he hoped to study the archives in Hanoi; perhaps he would have an answer for us then.

"The shakiest part is always the provenance," Ben had said to me when we first met. "It's almost like people read your mind, and if you want to think this was part of Maimonides' treasure which he got from a brother who was a gems dealer in ancient Cairo, sure enough, they'll say, 'Oh, yes, I think . . .' and you get sucked into your theory. But I find that if you keep digging and digging and digging, sometimes you can find a provenance through a diary, through a reference, through a picture, through a portrait, through hearsay. It's amazing how, if you stick to things, something will come out." It had happened with all sorts of pieces he had picked up over the years. But the orange pearls seemed to have left no trace behind.

WHEN I RETURNED TO NEW YORK, I tried to reach Bao Dai. A woman who answered the phone at his home said, "The emperor has never heard of these pearls; thus, he says, they do not come from the royal family." Since Bao Dai had been largely indifferent to the dynastic treasures, the only thing this proved was that he hadn't sold the pearls himself. After much searching, I located in Lugano a man named Saverio Repetto, who said that he had purchased six or seven of the orange pearls in Saigon in the early 1990s. I asked if the sellers had said that the pearls had once been owned by the royal family. Repetto said that he hadn't spoken directly to the sellers; the woman who had was now somewhere in Tanzania. He had, however, heard the stories. "For me," he said, "it's a legend. Like everybody—they want to increase their price." Repetto regarded the tale of royal origins as the ruse of Maimonides' brother. He burst out laughing when I told him that the collection now bore the legend "Royal Collection of Natural Pearls."

I was pretty discouraged by this conversation; but not Ben. "He probably sold them cheaply, and he doesn't want to admit they might have been worth much more," he suggested. Ben had been through that stage of ridicule before. Perhaps it would take years, but he was confident that his theory would ultimately be vindicated. Or perhaps Ben's conjecture would simply never be disproved. And that would

SYGMA

On a foggy morning, a fishing junk sets off across the waters of Vietnam's Halong Bay (top), where pearls are found only rarely, and then quite by accident. When caught in nets, M. *melos* are usually eaten soon after the fishermen lower their sails and cluster together in the shelter of an offshore island (above). The big snails may or may not be searched for pearls first.

CATHERINE KARNOW (2)

be fine, too. The rapture of possession never meant so much to Ben as the pleasures of the hunt. It was better, in a way, that the truth remained tantalizingly remote, for then Ben could lose himself in strange texts, distant excursions and unforeseeable, ingenious inferences. Ben was a mystic at heart; but so, for all his formidable logic, was the spiritualistic Holmes.

The last word had not, in fact, been spoken. I had learned the name of one of the pearls' owners, an Italian gems dealer living in Switzerland. He was coming to New York, and he agreed to speak with Ben and me. We met at the Harvard Club, Ben's home away from home. The owner, who asked that his name not be used, turned out to be a pleasant, dapper gentleman who looked to be in his early 50s. He had, he said, purchased Repetto's pearls; the others he had purchased himself, in Vietnam. He took the tale of imperial ownership more seriously than Repetto had, though he said that he had only put the plaque on the collection after Ben himself had endorsed the idea. Ben asked the man why he had bought the pearls in the first place, and he said, "I thought that they were rare and they were beautiful—like a dream." Ben beamed at the answer; it was what he would have said.

It turned out that the dealer, like Ben, came from an old and distinguished gems-dealing family. As we sat in the high-ceilinged gloom of the Harvard Club, he said that he owned a string of pearls that had once belonged to Marie Antoinette; an American had paid a million dollars for them during the Depression. Ben's eyes opened very wide, and he said, "If you had to choose between the Marie Antoinette pearls and the orange pearls, which would you take?" And the dealer immediately looked up from his Scotch on the rocks and said, "I'd rather have the pearls of Vietnam."

James Traub is a staff writer at the New Yorker. *Michael Freeman, a photographer based in London, is a frequent contributor.*

When light meets water

Monet on the Mediterranean

ONE OF THE REWARDS OF HOLDING A PERMIT TO ROAM through the world of art is the privilege of learning that you know less than you think you do. For instance, after years of Claude Monet exhibitions, after memorable encounters with the Rouen Cathedral series and the haystacks and the London landmarks and the obsessively rendered water gardens of Giverny, there seems little left to discover about that icon of Impressionism.

Then along comes the Kimbell Art Museum, the finely tuned little Texas establishment in Fort Worth, to tell us that for three brief periods in a long painting life, Monet hauled palette and canvas around the Riviera as well as along the canals of Venice and produced imagery that has been admired, praised, damned—and, until now, largely undiscovered by most of us.

The event is "Monet and the Mediterranean," offering 71 of the 125 paintings the artist turned out on those trips, many of them never before exhibited, nearly half of them, astonishingly, still privately owned. As a celebration of the Kimbell's 25th year, they will be on view from June 8 to September 7. Then, from October 10 to January 4, 1998, the exhibition will become part of the centennial celebration of the Brooklyn Museum of Art. Supporters include American Airlines, American Express, Burlington Northern Santa Fe Corporation and Evian Natural Spring Water.

BY HELEN DUDAR

In 1884, the year after he scouted the south with Renoir, Monet painted *Bordighera;* he probably borrowed from Cézanne the idea of framing the seaside town with trees.

ART INSTITUTE OF CHICAGO

Monet was an artist whose subject was intensely centered on light and the ways it transforms the visible world.

In two additional views of Bordighera, both painted in 1884, Monet exhaustively explored the variations in the way the sun-drenched southern light hit the four visual elements—the sky, the sea, the town and the lush vegetation.

Monet soaked up the colors of the Italian fishing village of Bordighera in 1884, wrestled with the gaudy beauties of the French Riviera around Antibes four years later, and then in 1908—his 68th year—confronted the shimmering surfaces of Venice. To be sure, the Venetian canals are fed by the Adriatic, not by the Mediterranean, but for this man of the cool north, all those places delivered gifts of exotica. They offered a seductive, inebriating sunlight that performed tricks with sky, rock, walls and the lush semitropical vegetation. For an artist whose subject was intensely centered on *light* and the ways it transforms the visible world, that sunlight was sometimes a painful gift—a form of nature, in Monet's own assessment, "even crazier" than his art.

Renoir's portrait of the intense Monet, brush in hand, dates from 1875.

The history of those three artistic ventures is notable for the failure of the works to find permanent acceptance. By the 1880s, Monet had outpaced his early detractors and was on his way to security and fame; yet the paintings he brought back from Bordighera were shown only sporadically and in small number. A better sampling from the second Riviera journey found gallery space in 1889, although the critical response was mixed. The Venice paintings were applauded in 1912 and then fell out of favor.

The inattention—perhaps more accidental than conspiratorial—helps explain why so many private collections shelter a Monet from those voyages. In museum-rich Paris, only two institutions can boast a glimpse of those trips: the Musée d'Orsay has one piece on loan from its owner, a French insurance company, and the Marmottan just accepted a Monet of that period as a gift. In contrast, 18 American museums have lent the Kimbell "southern" Monets—albeit not without considerable pleading on the part of the borrowers.

Much of the persuasion was the work of Joachim Pissarro, who tried unsuccessfully to stage the show four years ago while he was director of the Hermitage Foundation Museum in Lausanne, Switzerland, and resumed the labor in 1994 when he came to the Kimbell to be its chief curator. (This month, he moves on to New Haven where he will be curator of European and contemporary art at the Yale University Art Gallery.)

A tidy touch to this show is the fact that its organizer is a descendant of a Monet compatriot and fellow Impressionist; he is the great-grandson of Camille Pissarro, the gentle, fatherly figure of the period. Except for a brief rift, Monet and Pissarro were friends for years; they lent each other money in hard times, exchanged paintings, and sat down together to monthly dinner gatherings of fellow artists and writers at the Café Riche in Paris.

Needless to say, the young Pissarro, 38, boyish, intense and scholarly, is aware that some of the work he is showing has not inspired unanimous admiration. The paintings have been dismissed by more than one scholar as "tourist" art. In his study of Impressionism, that towering chronicler of the movement, John Rewald, mentioned the Antibes stop only in passing, while Clement Greenberg, a giant among modern critics, lamented that, with the Riviera work, Monet had "stumbled into prettiness." At an 1888 show, Camille Pissarro himself was a disappointed visitor and reported that Degas, even more critical, had seen the work only as "sale-room art."

Of course, one could see no more than surface in some of those Monets, or look unfeelingly upon an extravagantly lush palm tree that appears to be erupting out of the Bordighera soil. But, as the British scholar Kenneth Clark has insisted, Monet was forever engaged in a single obsessive mission, in proving that "the object painted was of no importance, [that] the sensation of light was the only true subject."

On the other hand, every work of art, even an abstract painting, has a subject beyond the painter's enslavement to an inner vision. Monet needed vistas in which the sun burned the earth, flicked across the sea, yellowed the sky, bronzed the leaves. In the exhibition catalog, Joachim Pissarro calls Monet "a pictorial digger."

Monet found his way south at the behest of his friend Pierre-Auguste Renoir who, looking for new regions to paint, proposed a brief scouting trip to Italy. It was December 1883, and there may have been good reason for Monet to want to get away from his newly rented house near Paris. He was living in Giverny with Alice Hoschedé, her six children and his two motherless sons. Only a few years before, during a financial crisis, the Monet and Hoschedé families, including Alice's husband, Ernest, and Monet's dying wife, Camille, had set up housekeeping together for a time; Ernest, a patron, indeed a major early collector of Monet's work, had fallen on hard times. Then romance intervened. Now Ernest was planning a Christmas visit with his children, and—a Monet scholar has proposed—the artist may have been reluctant to play holiday host.

The ten-day journey with Renoir was long enough to persuade Monet that there were new subjects to paint to excite

In *Study of Olive Trees*, 1884, Monet takes the viewer into the midst of the forest, as the Barbizon artists had done. As always, his subject is the effect of light—here, as it filters through the silvery-gray leaves and casts shadows of the gnarled tree trunks.

dealers, to entice collectors, to spark his own electric energy. He was doing well, but, scarred by the early years of struggle, he was forever hungry for more sales. Traveling home, he and Renoir paused in Aix to visit their friend Paul Cézanne. It was Cézanne who once famously said of Monet that he was "only an eye. But my God, what an eye," a tribute that managed to be simultaneously fulsome and patronizing. Anybody who has stood three inches from a Monet canvas and absorbed the images he created by piling up a half-dozen daubed colors in small spaces would surmise that an eye is nothing without a hand and an intelligence.

The visit to Aix also nourished Monet's imagination. Pissarro assumes he saw some of Cézanne's work and was inspired. On his return south he would use a familiar and clever Cézanne device: vistas of Bordighera with one or two gracefully twisted trees in the foreground, their branches forming a kind of inner frame.

Of course, influences in that extraordinary cluster of artists ran in all directions. You stand before a dramatically contorted olive tree that looks as if it were having a nervous breakdown and wonder if Monet had lately also encountered Vincent van Gogh. Actually, the piece was done two years before Van Gogh moved into the style that this painting echoes. By the 1880s, Monet was selling paintings to several galleries, and one of them, Boussod & Valadon, was run by Theo van Gogh. Pissarro thinks it more than likely that it was Vincent who discovered Monet at his brother's place.

Monet came back to Italy alone in January for what was to be a three-week sojourn. He stayed until April. It was not exactly a pleasure trip. Alice was apparently desperately lonely, and her letters complained of his absence. Monet, fearful that he might lose her to her husband, wrote every day and complained about almost everything. For him, a working trip was almost always a journey bedeviled by frustration, despair, fury. Something was usually wrong—the fickle weather, the problems of finding the right subject to paint, his inability to finish a painting.

"My God, this damn country is so difficult," he lamented. Or, "These damn palm trees are driving me crazy." His talent for self-pity, embellished by self-dramatization and tainted by self-doubt, was powerful. On one of the trips, and unable to relax, he confessed: "[There is only] my painting which obsesses me and torments me . . . one day I believe I have a masterpiece, then it turns to nothing; I fight, I fight without advancing." To his good friend Auguste Rodin, he announced, "I'm fencing and wrestling with the sun. And what a sun it is. In order to paint here, one would need gold and precious stones." When there was nothing else to harry him, he fretted in a letter to his dealer that his coast scenes might incite the anger of "the enemies of blue and pink."

Even before heading south, Monet had taken to carting a collection of canvases to a chosen site, altering his labor on each as the light of the day altered the look of a landscape. Now, in a "frenzy," he was working on six a day, then eight a day. After no more than a dozen weeks, he took the train home, carrying with him 38 paintings from Italy and 11 more done just across the border in France and Monaco.

We cannot know how many more he may have left behind. Monet's displeasure with his work was famously registered by applying a match, a boot or a knife to a painting that failed to satisfy him. It has been estimated, possibly with exaggeration, that in his lifetime he destroyed as many as 500 Monets. Once he wrote his dealer to postpone an exhibition because, out of more than 40 pieces planned for the show, he had just demolished 30.

Four years after Bordighera, Monet packed up his paints and went south again, this time moving about the Côte d'Azur after settling in Antibes. On that trip, he stayed mostly to himself, although allowing himself some society; his friend the writer Guy de Maupassant was visiting nearby and kept a yacht moored in Nice. Again, there was weather, fatigue and self-doubt to torture him. Again, Alice lamented the length of his absence, which extended from mid-January to May and produced 39 completed canvases. Monet's

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"These damn palm trees are driving me crazy," the self-obsessed and finicky Monet wrote to his future wife, Alice Hoschedé, who was back at Giverny. *Palm Tree in Bordighera*, probably the last work he painted during his 1884 trip, was surely a considerable challenge for him. Joachim Pissarro, curator of "Monet and the Mediterranean" at the Kimbell Art Museum in Fort Worth, writes: "The explosive fishbone structures of this single tree push the limits of Monet's chromatic boundaries. In the way that this wild tree stands on its own, like a disjointed giant, it is tempting to see a projection of the artist himself." Although large in impact, the oil measures only 24 by 29 inches; with few exceptions, most of Monet's 125 Mediterranean works are of similar size.

PRIVATE COLLECTION

Old Fort at Antibes, 1888, is one of a series from Monet's second sojourn. "It is so bright [here] that the slightest touch of paint that is not right looks like a stain of dirt," he said about painting in Antibes.

In answer to critics who maintain that Monet's Mediterranean paintings are mere "tourist works," Joachim Pissarro singles out *The Sea and the Alps*, from 1888, as hardly a postcard scene.

answer, reminding her that the household sorely needed the francs he hoped his paintings would fetch, instructed her in patience: "Do remember that I desire you as much as you do me, but painting, damn painting, is my life, and consequently it is your life, too. . . ."

Monet came back with some romantically hazy, sun-drenched views of the old fort and the old castle of Antibes with the Alps beyond, the whole scene viewed from a hillside perch across the bay. But he also brought home images of water and rock that do not announce themselves as typical postcard scenes of the south.

Monet has been viewed as detached from the subjects in his works, but *Under the Pine Trees, Evening*, 1888, conveys his attachment to things that grow from the soil.

"Now, is this 'pretty'?" asks Pissarro, mocking Clement Greenberg's dismissive complaint as he pages through his catalog and stops at *The Sea and the Alps* (opposite). Not exactly. The picture conveys an odd stretch of lavender-green sea pierced on the right side by a small outcropping of red rock; beyond the water stretch the snowcapped Alps, tinted in the palest lavender. Certainly it is not a tourist picture. Indeed, if you walk past it at a fast pace, you might think it is a modern exercise in abstract expressionism.

Among the extraordinary pieces from that visit are, literally, portraits of trees. The catalog has pictures of one group of seven landscapes in which parasol pines dominate the foreground. Pissarro succeeded in borrowing four, including *Under the Pine Trees, Evening* (above). Monet has been seen as an artist who always detached himself from the subjects of his art; yet, that simple line of trees seems to convey a moving personal statement, an expression of the artist's fierce attachment to things that grow out of the soil.

Strangely, human figures have been banished from almost all of these paintings, along with any sense of the period. The man who had painted the Gare Saint-Lazare in all its smoky bustle, who had memorialized the great, busy Boulevard des Capucines, who had once shown us handsome women in fashionable clothes, appears to have entirely exiled modern life and living creatures from his art.

One student of Monet's work, applying modern psychoanalysis to the subject, has suggested that the absence of humankind demonstrates Monet's profound narcissism. The people in his daily life, argues Steven Z. Levine, an art history professor at Bryn Mawr College, were "treated as though they exist[ed] to gratify his exigencies alone." If there are no figures in his landscapes, Levine concludes, it is because Monet, consciously or not, saw himself as the human element of his unpeopled vistas. Maybe that is so. One must ask whether knowing this and believing it to be true adds to one's pleasure in or understanding of the art.

The results of the second Riviera trip were a success, forever freeing Monet of fiscal anxieties. The year after the sojourn, Theo van Gogh sold one Antibes painting for a record price of 10,350 francs. Within two years, Monet's annual income was more than 100,000 francs and he was a famous man. Admiring artists traveled the 50 miles from Paris to Giverny to visit, and some stayed to paint; the company, however, was not entirely welcome to the resident celebrity. In 1884, Monet had returned to Bordighera without Renoir because he had become uncomfortable about the idea of working in the presence of anyone, including fellow artists. What he sought was uninterrupted time to paint.

Still, at the end of 1908, when Monet set off for Venice for what would be a three-month stay, Alice came along. The years had brought substantial change. Their children were grown. Ernest Hoschedé had died in 1891, allowing Alice and Monet to marry. Monet was rich, prosperous enough to add to his property, to build a fabulous and famous water garden (SMITHSONIAN, February 1980), to hire the help needed to tend the magnificent flower beds around the house and, no less importantly, to support talented tailors.

Even in his impoverished early years, Monet had impressed his friends with his dandified tastes; a fine shirt with lace at the cuffs, worn while at work, was one of life's necessities. Late photographs show a copiously bearded man with an ample middle, nearly always dressed in beautifully tailored tweeds. He is almost always seen with a cigarette in his hand or mouth, an addiction that would ultimately, fatally, ravage his lungs.

By the time Monet boarded the train to Venice, his eyesight was beginning to trouble him, a symptom of the cataracts that would bedevil him for years to come. Fearful that surgery would affect the quality of an extraordinary vision, he managed to avoid the operating room until 1923.

The Venice paintings offer no hint of eye problems. They are breathtaking portrayals of mighty palatial monuments and fields of water that seem to be melting together under the sun. In an essay written for the exhibition of the Venetian work, Monet's friend Octave Mirbeau, the critic and novelist, proposed that in that fabled city Monet no longer labored to conquer light but simply chose to "glide" along the surface of the canvas. The results, as Pissarro notes in the catalog, are "almost ethereal—half real, half unreal."

Because Alice was on hand, we are deprived of the insights of letters home. (A prolific correspondent, Monet left behind 2,685 letters, most of which convey his exclusive

concern for himself or for his work and the best ways to excite interest in it.) But we do have a letter from his wife reporting that "Monet," as she referred to him, at first found the city "too beautiful to be painted" and refused to go out with painting gear. Eventually, of course, he relented; he would come home with 37 pictures.

As usual, Monet brought as many as ten canvases to any site he was recording, but his approach to the work was altered. In Venice he seemed to be more concerned with capturing a scene under unchanging conditions. So he might sit on a platform on the island of San Giorgio to paint the Doges' Palace across the canal on San Marco. Then, when the light had shifted, he would move to San Marco to paint the island of San Giorgio. After lunch, he might go on to another site altogether.

In one instance, he hired a gondola for several days and demanded that the gondolier moor his vessel at the same time every day at exactly the same spot at mid-canal; he wanted identical close-up views of the brilliantly symmetrical facade of the Doges' Palace. But after a spell of bad weather, they could not find the right spot, and Monet had to give up a day's work. As Pissarro notes with amusement, there were throngs of artists in the city at the time, and none of them found it necessary to make a gondolier's life "impossible." But then, he adds, "there's always an element of acrobatic performance in Monet."

In the interest of accuracy, it must be noted that some of the works Monet brought home from Italy actually include what could be a human figure, something like a squiggle or two rising out of a gondola. Otherwise, a stranger to the idea of Venice might never know that people lived there or came there to inspect its treasures.

To be sure, if you stand too close to one of those canvases, you are apt to see squiggles everywhere or, more accurately, piles of multicolored patches applied in broken brushwork. Because Monet painted from "afar," often using a long brush, his pictures, as a contemporary critic once noted, demanded distance. Standing a few inches away, the viewer would take in little more than "a confused jumbled surface, rough and flossy like the otherside of a Gobelin tapestry." It may have seemed like clever trickery, but it was the work of a man who, even when plagued by incipient cataracts, was granted a vision for color and light allowed to few humans.

"Bonnard, Pollock and Rothko, not to mention every color-field painter who came out of an art school, lie cradled in Monet's woven strands."

In 1908, the 68-year-old Monet sat in a moored gondola to paint the Doges' Palace in Venice.

Although Monet liked to create the impression that his work was entirely and importantly the result of his labors *en plein air*, in fact he nearly always felt the need to rework his pictures after returning to his studio in Giverny. With the Venice pieces, this consumed more time than usual. Then, in 1911, before these paintings were finished, Alice died, leaving Monet inconsolable—too heartsick to pick up his brushes for a good while.

The public finally saw the Venetian paintings in a major gallery event in 1912 and responded with high enthusiasm. Perhaps because he was still mourning the loss of Alice, Monet seemed indifferent, indeed, meanly ungrateful for the attention. To him, the light-drenched beauties of the old city now merely represented "dead facades"; the critics' praise of his paintings became the utterances of "idiots, snobs and traffickers."

It is also possible he was put off by the assumptions of the notices that his work was probably near an end. He was, after all, 72. Pissarro observes that Monet's admiring friend, critic Gustave Geffroy, treated the show as Monet's "swan song" and, moreover, probably the closing chapter in the waning days of the entire Impressionist movement.

Now, as it happens, Monet would still be stabbing paint on canvases ten years later when Geffroy's important biography of him appeared under the title *Claude Monet: His Life, His Times, His Work*. He would live into his 86th year before succumbing to lung disease in 1926. In the time left to him, he would memorialize the Giverny water gardens on vast surfaces that grew into spectacular room-circling pools of lilies. And there would be, as well, almost hallucinatory water scenes splotched with orange, red, green—pictures that would become lessons for whole new generations of men and women who would create new art. As critic Robert Hughes has noted, "Bonnard, Pollock and Rothko, not to mention every color-field painter who came out of an art school, lie cradled in Monet's woven strands."

Helen Dudar, who visits the Mediterranean every year, says that many of the vistas Monet painted are now obscured by high-rises.

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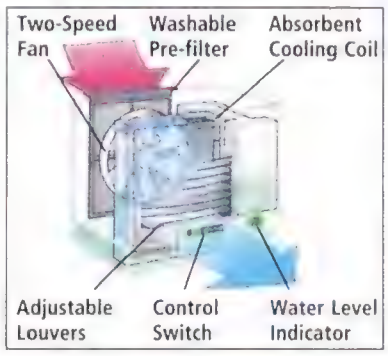

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Women AND Flight

SHANNON LUCID A mission specialist on five space shuttle flights, astronaut Lucid (paired here with a sculpture of a cosmonaut in Star City, Russia) set a U.S. record of 188 days in space, mostly aboard the Russian space station Mir.

"WE DIDN'T HAVE A WHOLE LOT OF MONEY IN those days, in 1939," says octogenarian aviator Doris Lockness. "We had a refrigerator that had a meter, and you dropped quarters in there to keep it running. It was always a toss-up, whether I was going to drop my quarters in or use that money to go fly." Lockness is one of 37 contemporary women pilots profiled in a new exhibition on view at the National Air and Space Museum (NASM) through September 12. Organized by the Smithsonian Institution Traveling Exhibition Service, "Women and Flight" presents a striking display of portraits and interviews by NASM staff photographer Carolyn Russo. A companion book, *Women and Flight: Portraits of Contemporary Women Pilots*, is now out from Bulfinch Press. Women aviators have been on the wing since 1908, just five years after the Wright brothers' pioneering flight. For decades, though, women pilots were hindered by social, economic and legal barriers. Only in the past 25 years have professional training and career opportunities become widely available. Today, as these photographs aptly attest, women are flying everything from hang gliders and helicopters to commercial airliners and space shuttles. "I wasn't just looking for the first and most famous," says Russo. "I wanted to show a variety of flying careers—to find women with good stories who were doing something a little different in American aviation." From a skywriter who pilots an open-cockpit biplane to a U.S. Air Force captain who flies U-2 reconnaissance missions, these pilots personify the expanding presence of women in the sky and in space. —*Diane M. Bolz*

PHOTOGRAPHS BY CAROLYN RUSSO

LINN BUELL "To find lift," says pilot Linn Buell, "I'll tow the glider under the biggest, baddest, blackest cloud I can find. There's always lift there." Buell, who has been towing and flying vintage gliders since 1985, is seated here in the cockpit of her Schweizer 1-26s antique glider.

EVIE WASHINGTON A Cadet Flight Orientation pilot for the Civil Air Patrol, flying instructor Washington spreads her wings at Maryland's Hyde Field, the airport where she learned to fly. Washington grew up in Alabama, near a military base. "Being so close, C-130 and C-141 airplanes came across our field real low. I was around 9, 10 years old. And I thought, 'Gosh, that would be awesome to fly something like that.'"

MAYTE GRECO A founding member of Brothers to the Rescue, a group of pilots who fly search and rescue missions over the ocean between Florida and Cuba looking for Cuban refugees, Greco is the mother of five and runs an air taxi service out of Fort Lauderdale. Russo caught Greco at Miami's Opa-locka Airport, amid rafts used by refugees, the day before two "Brothers" planes were shot down by the Cuban military.

MARTY GOPPERT As a volunteer pilot for the Flying Circus in Bealeton, Virginia, Marty Goppert reenacts the barnstorming air shows of the 1930s. Flying an antique open-cockpit PT-17 Stearman, Goppert performs aerobatics and comical stunts and takes people "ride hopping." After learning to fly at age 38, Goppert, who is also a nurse, worked for commercial commuter airlines and for a medical airlift.

DOROTHY AIKSNORAS-VALLEE A first officer for Northwest Airlines, Aiksnoras-Vallee is responsible for preflight checks of the Boeing 757s she flies. Here, she is dwarfed by one of the plane's giant engine turbines. "The best part about flying," she maintains, "is that every day I can probably be guaranteed a sunny office. And watching the Northern Lights. It looks like a shimmering curtain of colors dropped on a stage."

FLORENCE PARLETT Operator of Annapolis Flying Service at Lee Airport in Edgewater, Maryland, for 40 years, Parlett, who flew until she was 83, brandishes shirttails from former students who soloed at her airport. "I wasn't out there to just fly," she told Russo, "I was out there to promote aviation. And what I tried to do is to keep my prices down so that the ordinary people could afford it."

PATRICIA JENKINS "I've watched the cowboys and learned how to move cattle the way they do on horseback. I don't just barge into a bunch of cows. . . . I stay in a slow, dusty, old hot hover, and let them walk at their own speed." "Flying cowboy" Jenkins monitors her family's Oregon cattle ranch in a Hughes 300 helicopter she calls Woodstock. "When I go to work, I fly over antelope and deer . . . I have a great commute."

MARSHA NEAL President and owner of La Conquista Hot Air Balloons, an aero-advertising business based in North Carolina, Neal (silhouetted here against a hot-air balloon) teaches ballooning, and sells and races gas and hot-air varieties. The winner of numerous competitions, she says: "The most incredible thing, flying over the countryside, is that you hear this network of dogs talking to each other."

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THERE'S ONLY ONE

Pipe Dreams

THE ROYAL INSTRUMENT IS THE MOST COMPLEX AND POWERFUL YET DEVISED BY THE HUMAN MIND

BY DONOVAN WEBSTER

IT'S A NOVEMBER EVENING IN 1994, and a Charlottesville, Virginia, man named James Sivley is boarding a plane for Canada. Tomorrow, in a three-story factory outside Montreal, he has one quick meeting scheduled. Its outcome is worth more than $530,000. The following day, when he enters a room where the goods are shown, Sivley knows immediately that his deal will go smoothly. "I sat down," he says, "and it was . . . amazing."

Sivley had finally found himself in the "montage" room at Casavant Frères, Limitée, a pipe organ builder in St. Hyacinthe, Quebec. He was there to test the new organ for the First Presbyterian Church of Charlottesville, where he serves as organist. "It was the first time the organ had been completely assembled and played," Sivley says, a grin still in his voice. "After playing just a couple of notes, I knew it was the instrument I'd always hoped for. Playing that organ for the first time? Well, it was like being given my life's dream."

Of all the world's musical instruments, few compare with pipe organs in terms of history, versatility or the unswerving fealty they inspire. Why the broadly quiet allure? Perhaps it's that pipe organs are the largest, most complex and most powerful musical instruments on earth. Or that, better than practically any other musician's tool, they can imitate any family of instruments—as well as mimic an entire symphony orchestra. Or maybe it's their history: pipe organs reach back more than 2,000 years.

The earliest known pipe organ, called a hydraulis, was invented in the third century B.C. by Ctesibius of Alexandria, a Greek engineer. Using the power of falling water to push a constant jet of air through a set of different-sized tubes, the hydraulis was said to create an ethereal—if rather limited—palette of sounds. A few centuries later, a "dry" pipe organ (which

PHOTOGRAPHS BY RICHARD ROBINSON

Stanley Scheer tests a completed organ at Casavant Frères in St. Hyacinthe, Quebec. This one is destined for the First Baptist Church in Mount Gilead, North Carolina.

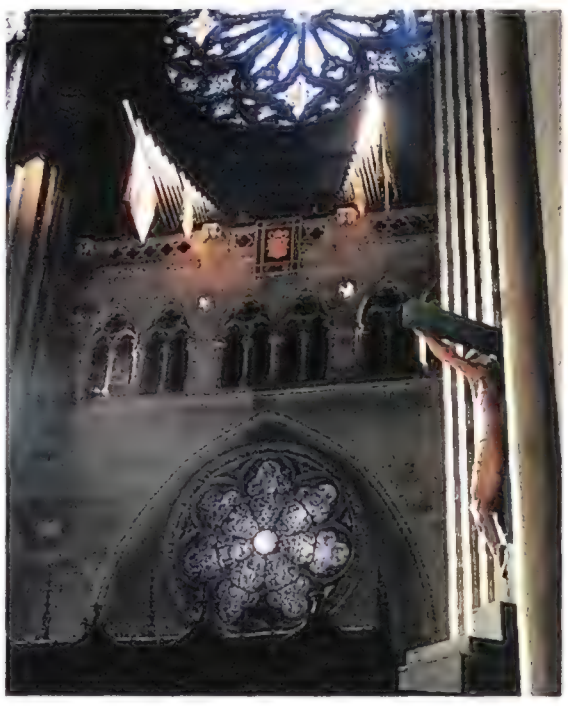
depended on a bellows to generate its wind power) appeared in Byzantium. After that, the major features of today's pipe organs evolved with time.

Made primarily of wood, tin, lead and iron, the low-tech mechanics of pipe organs have proved rock solid for centuries. And if the scale of some pipe organs can billow toward overwhelming—the largest working pipe organ, the Wanamaker Organ in Philadelphia, has 28,500 individual pipes—the mechanics of any two are reasonably similar.

No matter how many pipes an organ has, the element that makes it go is forced air. To have a steady flow of it, most organs have one or more "reservoirs" that perform the same function as the bags on bagpipes. On organs, these are boxes with tension springs, bellows edging their sides, and valves allowing each reservoir to hold and exhale a steady stream of "wind." Filling the reservoirs with air was originally done by muscle power (often with a bellows operated by boys from the congregation). After about 1900, motors began to drive fans and bellows.

No matter how the air is pressurized, once inside the organ it must be routed to exit through the pipes. And regardless of the scale, for any pipe organ the pushing of air from reservoir to listener involves three basic elements: forced air, the organ's pipes, and the air's release through the pipes by manipulation of keyboards and controls.

Dorothy Papadakos, cathedral organist at St. John the Divine in New York, looks over Gershwin music, which she often plays. Below is the State Trumpet, which mimics the trumpeters at Buckingham Palace.



With steady reserves of wind available, pipes become an organ's most crucial component. At the most basic, there must be one pipe for every key on the keyboard. In practice, however, organs usually have several pipes of different styles, each producing a different tone, for each key. With so many pipes, most organs require two to six keyboards, each controlling different rows, or ranks, of pipes. By playing two keyboards at the same time, organists can blend different timbres and volumes of the same note at once. The pipes themselves have a seemingly endless variety of shapes, sizes and constructions, which together determine each pipe's voice—brassy, naturally reedy, or wood-flutish—and give an organ its personality.

Most organ pipes are variations of two basic kinds of pipe. There are flue pipes, which function like children's whistles, and reed pipes, which have slim brass reeds inside that vibrate against grooved shallots as air passes over them. Each pipe's "foot" is seated into a "wind-chest," the box into which the reservoirs deliver their pressurized breeze.

In a simple mechanical organ, air passes from the wind-chest into the pipes, access to which is regulated in part by sliders, movable wooden slats with holes cut to correspond to the pipes' toe holes. Each slat controls a group of pipes, usually of the same tone and known collectively as a stop. Movement of these slats is controlled by "draw knobs," which are often called stop knobs or stops, as in "pulling out all the stops." When a stop is pulled open, a slat slides into place, allowing wind to move from the chest through a hole in the slat and into the appropriate pipe as a note is played. When a stop is shut, the slat slides out of place, blocking airflow and silencing the pipes.

Finally, there are the tiered keyboards—called manuals—where two major types of "actions" exist. Keys are the other means by which the organist controls the flow of air into particular pipes. The oldest action uses a physical linkage (usually wood strips) to connect the keys to valves that admit air to each corresponding pipe. These are called mechanical actions. The second type, in which electrical circuits and electromagnets cause metal valves on a pipe's foot to open and close, are called electric actions. Several different kinds of actions fall under the "electric" heading. All that really matters is that once an organist fills the reservoirs, opens and "mixes" a few stops, then begins to play the manuals and pedal board (an extra keyboard with long pedals manipulated by a player's feet), two remarkable things happen:

1. if the organist is playing a particularly involved piece of music, his or her hands and feet will be moving over the levels of manuals and stop knobs like a marionette being jangled by a chimp; and

2. if the organist knows what he or she is doing, an amazing, subtle, sometimes loud, glorious, rich and ancient form of music streams forth.

Yet even if a pipe organ's sturdy mechanical technology allows it to function for hundreds of years, when things go

ILLUSTRATION BY JOHN GRIMWADE

Tuning wire

Reed tongue

Shallot

REED PIPE

Toe hole

Upper lip

Mouth

Lower lip

FLUE PIPE

Toe hole

THE PIPES

Large organs have thousands of pipes ranging in length from a few inches to more than 30 feet.

The smallest

The largest

Pipes

AIR

Toe hole

Key channel

Slider

Key channel

9

8

Pallet

AIR

Wind-chest

Link to key

6

4 Wind-chest

HOW A MECHANICAL PIPE ORGAN WORKS

A blower 1 pushes air through a regulating valve into a reservoir 2. From there the air travels up the wind-trunk 3 into an airtight box, the wind-chest 4. A row of pipes is controlled by a stop knob 5. As the knob is pulled out, a wooden slat called a slider 6 is moved, and holes in the slider line up with the pipes. Now these pipes can be played. When the organist depresses a key 7, a pallet 8 opens, and air enters a key channel 9. All the pipes on that channel (whose stops have been opened) will sound.

7 Keyboard

Mechanical link

Mechanical link

3 Wind-trunk

Stop knob 5

AIR

2 Reservoir

AIR

Regulating valve

1 Blower

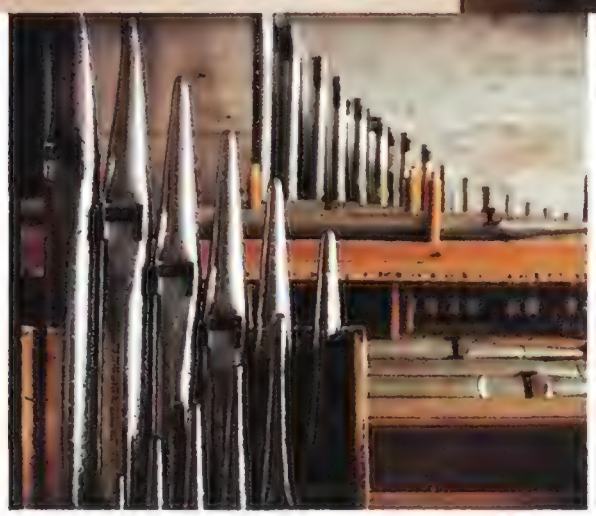
kerflooey the disaster can assume devastating proportions. Consider what happened to the organ at the Cathedral of St. John the Divine in New York City. The organ—built for $45,000 in 1910 by the now-defunct E.M. Skinner Company (later Aeolean-Skinner) of Boston—is an 8,035-pipe, 118-stop monster considered by many to be the most magnificent specimen in the United States. Valued at more than $6.5 million today, it possesses (among other things) the head-turning State Trumpet, the world's most powerful working organ stop. But on a steaming July day in 1995, the old organ's craftsmanship and power couldn't save it from a heatstroke.

"I was accompanying a state funeral service," says Dorothy Papadakos, the cathedral's principal organist, "and I heard a *bang*." In seconds, she says, the wind pressure had disappeared from two-thirds of the organ's wind reservoirs. "They had simply blown apart," Papadakos says.

On this early summer day, Papadakos is leading me back into the guts of the organ works, stepping through a wrought-iron gate separating the public areas from the cathedral's hand-hewn stone walls. She has just shown me a small, shuttered room inside which the pipes for the Swell organ, one of the organ's seven divisions, are housed. A familiar sound for those who've heard organ music, the Swell organ's voice is adjusted by opening and closing the shutters. When these are slowly opened, the tones created seem to rise (or "swell") gloriously to a crescendo as the note is held.

We step closer, moving past armies of organ pipes—square wooden flue pipes and round zinc-and-tin specimens—some of which are shorter and thinner than a pencil. Papadakos puts her hand on one of the destroyed reservoirs. It's the shape of a full-sized bed turned on edge. A lattice of springs holds two facing wooden sheets together, with the leather bellows folds—now sheared and torn—glued and nailed between. A campaign has been mounted to restore the organ, only half of whose pipes currently sound.

Papadakos leads me back into the cathedral. We stroll along the length of the building—longer than two football fields, from end to end. She opens an ancient-seeming door of carved wood, then leads me up a dark spiral staircase before we exit onto an elevated platform overlooking the altar and the great choir of the church. "Welcome to the organ loft," Papadakos says. "This is the cockpit."



At Casavant Frères, Robert Desormeaux (above) attaches striking weights to a playing mechanism; flue pipes (right) await cutting to give them proper pitch, a step called voicing. Opposite: Pierre Guilbault (top) prepares to voice a flue pipe; and (bottom) Réal Huard and Yolande Soly ready wiring for a new organ; the circuit board, foreground, is the organ's brain.

Setting down her door keys, she flips a few switches. I can hear turbine blowers kicking on somewhere above me. She sits at the console and slowly begins to play. Pulling stop knobs, she improvises, mixing and blending the sounds of an orchestra at her fingertips. "The biggest pipes we have here are the 32-foot contre bombardes, violones and open basses," she says. "The open basses are so large in diameter you can stand inside them. The smallest pipes are, oh, maybe a half-inch long."

She pulls out different stop knobs and sways with the music. "This is how I change the orchestral colors," she says. Each time she makes a stop shift, the sound swirls with different tones. She summons the mellow English horn; then the edgier cromornes; then the oboe. "And this is my favorite stop," she says, pulling the French horn and playing a flourish of butter-rich notes. Next it's flügelhorn and contrafagotto, and the haunting voix humaine (human voice).

Papadakos lifts a telephone near the console. She calls a tour booth near the cathedral entrance and says: "Just wanted to let you know, I'm going to hit a few notes on the State Trumpet." After hanging up she explains that she's not supposed to play the State Trumpet during tourism hours, because it is so startlingly loud, but she's going to bend the

"I was accompanying a state funeral service," says Dorothy Papadakos, the cathedral's organist, "and I heard a bang."

rules in the interest of journalism. Then she pulls another stop knob, hits a chord . . . and there's . . . nothing. No sound at all.

About the time I start to ask what happened to the notes, the sound hits: an earsplitting C-chord fusillade rips past us, bouncing and echoing around the building's high altar and apse before returning down the nave again toward the front of the cathedral.

After the trumpet's sound dies completely, she continues: "The cathedral has an eight-second echo. Which is what makes playing continuous music here so complicated. You have to know how long it takes for the sounds to dissipate. It makes details like tempo a consideration. I watch the choir and conductor on closed-circuit TV and listen to them through a microphone setup. I play a beat ahead of what I see and hear. It can get pretty complicated."

Across the Atlantic at St. Paul's Cathedral in London, the pipe organ is unique for reasons other than size and strength. On a late-spring Friday, I find myself standing beneath what may be the most famous dome in Britain and speaking with John Scott, St. Paul's organist and music director. "This isn't the most powerful or the largest instrument in Great Britain," he's saying, as he walks me toward the organ loft, high above the polished wood and softly glowing lamps of the choir. "In fact, this is probably only the third-largest instrument in Britain. Yet it's still on everyone's list of favorite organs to play. Handel loved to play it. Felix Mendelssohn used to come up here and play so long they'd shut off the wind to make him stop."

The two qualities that make the organ impressive, Scott says, are its age and the domed proportions of St. Paul's itself. Scott unbolts a door and leads me into the organ loft. Taking off his overcoat, he flips on blowers for the reservoirs. "Don't get me wrong; this organ is certainly a fine one," he continues. "The original parts were built in the 1690s. Since then, it's been renovated several times. The bulk of the organ dates from the renovation in 1872. That age adds richness, I think."

Still, Scott says, the age of the instrument isn't the only element that makes St. Paul's organ so desirable: the cathedral also plays an important part. Started in 1675 and finished in 1710, the building was designed by Sir Christopher Wren, perhaps England's greatest architect. "The shape of the dome, the proportions of the overall structure, and the luxury of having the pipes spread across the dome in what's called the Quarter Gallery," Scott says, "combine in such a way that the acoustics are tremendous. The arrangement of the pipes, plus the church's nine-second echo, well, you can do remarkable things with those qualities."

Scott sits down and begins to play. He pulls a knob for the claribel flute stop, a delicate and angelic sound. "Wren didn't make considerations for an organ of this size when he designed the cathedral originally," Scott says. "He called the organ a 'confounded box of whistles.'"

He pulls out other stop knobs. He plays a few hearty notes on the contre bombarde, a stop whose longest pipe is a throaty, 32-foot reed laid on its side in the Quarter Gallery. He plays the West organ, which produces a brassier sound. "This is a favorite for ceremonial music," he says. "It's wonderful for when the queen or queen mother shows up."

Scott launches into an improvised tune, all pomp and circumstance. As he does, he pulls out a few more stops, and music issues from nearer by the organ loft, from the north and south sides of the chancel and from the dome as well. "That's one of the marvelous things about this instrument," Scott continues. "You can surround the congregation with sound. It's wonderful."

During World War II, the organ was dismantled for safekeeping and stored in the crypt beneath the cathedral. When

an unexploded bomb hit St. Paul's and crashed through the dome and the floor, it hit the organ, damaging some of the stops and pipes.

To illustrate the relationship between the organ and the building, Scott says, he wants me to listen closely. "I'm going to play some improvisation, and when you see me lift my left hand, watch my right one play a note and hear what happens."

With that, Scott bends forward and begins to play with deep concentration, the music a delicate filigree of sounds and pitches that seems to wash from one side of the cathedral to another. Then, after a minute or so, he lifts his left hand into the air and strikes a key with his right. Amazingly, a single note issues from the wooden cases near the choir and slides into the dome, its sound audibly moving away from us, sailing across thin air, diminishing as it goes. For the note's entire nine seconds of echo, Scott listens; then he points at his watch. "That's the whole thing," he says. "Beautiful."

Music director and organist John Scott calls the instrument at St. Paul's Cathedral in London the Rolls-Royce of organs.

Later I follow James Sivley's track to Canada. "Ernest Skinner is supposed to have said that the most important stop on any organ is the acoustics of the room," Stanley Scheer is telling me. Tall and meticulous in his business suit and combed-back graying hair, Scheer is vice president at Casavant Frères, one of the oldest and most venerable pipe organ makers in North America. "No matter where an organ is, the room is an enormous factor in how it will sound. And fitting the instrument and the room together is an important part of what we do. Put a large organ in a room with poor acoustics, and it won't have the magnificence it was designed to have. All factors must be addressed."

On an early summer afternoon, Scheer is walking me through the organ-making process at Casavant, conducted within a series of three-story clapboard buildings—a labyrinth of studios, offices and storage areas. "When you call us," Scheer says, "it's the beginning of a long-term relationship. We understand that. And that's not just a sales pitch—ask anyone who has dealt with us. It's what we're known for.

"At the beginning of any new project," Scheer says, turning around to face me, "we do some very involved study. We know our organ is going to last for hundreds of years, so we document everything. Sometimes, we end up with the only remaining copy of a plan the church lost years ago. We keep very thorough files."

Scheer opens a door, and we pass through. On the other side, bent over a drafting table, is Benoit Gendron, Casavant's artistic designer. Today, the tall, dark-haired Gendron is hard at work on a proposed design for a church in New York City.

"Getting a good design is both simple and very complicated," he says. "Usually someone like Stan Scheer goes to the client in question, takes measurements and asks what the church is interested in. Will organists, for example, be playing with orchestras?

"Answers to all the questions affect the design, and what types of pipes and extras are included," Gendron says. "There must also be financial considerations: How much money does the church have to spend? After we get all this, we try to create something that marries all of the client's needs. Then it is my job to 'put a face' on the instrument." Gendron will render a visual design of the organ in its intended space.

"We try and make it look like the organ was always there," Scheer says, steering me out of the design studio and down another hall toward the console department, where the manuals for a church in Hampton, New Hampshire (Casavant Opus 3753), are being completed. Made of basswood, with surfaces of ebony or bone-covered rosewood, each key on every 61-note manual must be dropped into place and carefully adjusted. In fact, each manual takes an entire week to make. One man, Denis Bienvenue, has been fabricating keys and testing their action, using a counterweight and the delicately knowing press of his finger, for 26 years. His father worked for the organ maker for 30 years.

Nearby, Claude Pelletier precisely fits thin pieces of wood into poplar wind-chests, so air will be efficiently routed to the right pipes. "We use poplar for the wind-chests because it is a dense wood," he says. "It is very stable over time."

"It is important to get this exactly right," adds Jean-Pierre Joyal, who is working on a new case for a 1960s Augusta, Georgia, organ (Opus 2900), which didn't originally have one. "Otherwise, we have to travel to where the organ has been shipped to fix it. That's expensive."

Each of Casavant's operations is a fastidious process. Deadlines are rarely an issue. "When we enter into a contract, we're talking about a two-year commitment at minimum," Scheer says. "So we build each instrument at a pace where we know everything is just the way it should be."

CHRISTOPHER CORMACK

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Downstairs, they're making organ pipes—and doing it from scratch. While some pipes in most organs are constructed of wood, many more are made of metal. Four or five times a month, a furnace in the basement heats exceedingly specific amounts of tin and lead into a molten brew that is quickly poured onto a 12-foot, granite-slab cooling table. There it is spread to a uniform depth and allowed to harden at the prescribed thickness. Once cooled, the custom-made alloy sheets, along with purchased sheets of zinc and copper, are taken upstairs and cut into a variety of shapes, which are molded around hand-shiny wood mandrels shaped like cones and tubes. When the metal has been hammered or rolled around the form, its seams are smoothed and soldered tight. Finally, in the case of flue pipes, the pipe's length is trimmed and a precise "mouth" opening is cut into the metal, bestowing each new pipe with a voice it will carry into the years and centuries to come.

As we finish the tour, walking back toward Scheer's office after a few hours inside the studios, I ask how many organs Casavant has built. With the glowing light of sunset falling through the windows, Scheer turns to me, beaming proudly. "By the end of 1996, we will have completed about 3,750."

Back in Charlottesville, Virginia, on a cool November night in 1996, James Sivley sits at his organ: Casavant Opus 3738. A tasteful brute with three manuals, 3,391 pipes and 42 stops, the organ arrived at the church in early 1995. After eight weeks of preparation, four for installation and four for fine-tuning, it was ready for the congregation.

Now, a year later, Sivley is running his hand along the top of the wooden console. "I remember the first time I played it here in Charlottesville," he's saying. "And it was like I wanted to be alone with the experience. It was like driving a Lamborghini."

As he sits and begins to play softly, he says, "We'll start quietly here, but I love playing it loud. That's why I often practice at night."

He begins. Over and over, he repeats the same rhythmic melody: "*DA*-da, da-da, *da* . . . *DA*-da, da-da *da*." At first, Sivley uses only the strings and soft flute stops. "These are the nice and quiet stops," he says. "I call them the money stops. They're good to play during offertories. Good for those times when we want to invoke serenity."

The theme chases itself round and round through different pipes and voicings.

James Sivley likens playing Casavant Opus 3738 to driving a Lamborghini.

One of the last things Stanley Scheer told him, Sivley remembers, was a caution. "He said, 'Start quietly with the congregation. You don't want to blow the listeners out at first. It will prejudice them against the organ.' He advised me to acquaint people to the organ's power slowly. He was right."

The theme keeps coming: *DA*-da, da-da, *da*. . . With each pass, Sivley adds more volume and pulls out more stops. The trumpets: *DA*-da, da-da, *da*. . . The foundation stops: *DA*-da, da-da, *da*. . . Before long, the organ's sound is filling the 600-seat church to overflowing. Outside, no doubt, the organ's power can be heard. As Sivley continues his musical journey through the instrument's variety, the church is literally roaring with the tuneful blare of *DA*-da, da-da, *da* . . .

As Sivley adds more stops, *DA*-da, da-da, *da*, the theme chases itself round and round through different pipes and voicings. The organist's hands and feet move with deliberate speed across the manuals and foot pedals. "Here come the horns and Great organ," he shouts over the din as he pulls out those stop knobs. *DA*-da, da-da, *da*. . . The sound has reached a deafening majesty, with Sivley leading the melody around two more circuits before lifting his hands from the keyboards and letting the instrument's full-bore force echo across the church's darkened pews.

As the sound dissipates, Sivley sits on the organ stool, grinning. A few seconds later, when the church is quiet again, he says: "The local news came in and did a story about the organ when it was just new. They interviewed me for maybe an hour. Then, when the story was broadcast, I had only one quote. They had me saying: 'I feel like a kid in a candy store.'"

Sivley reaches up, touching the organ's console again. He pauses to adjust a few stop knobs. Before launching into a favorite snippet of organ improvisation, he smiles, obviously bursting to tell me something.

"Don't get me wrong," he says, smiling and looking up at me. "That quote about being a kid in a candy store isn't wrong. It's just, well—it's just this organ is a far more complicated subject than that."

Donovan Webster is based in Charlottesville, Virginia. Richard Robinson had to light a cathedral without losing its sense of mystery.

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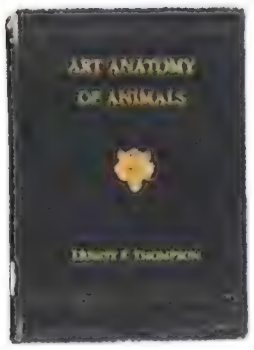


DURING THE LATTER PART OF THE LAST CENTURY and the first half of this one, Ernest Thompson Seton wrote some 60 books and nearly 400 magazine articles and short stories. He illustrated much of that material himself and delivered thousands of public lectures. As a self-trained biologist, he was concerned mainly with birds and mammals, their habits and habitats, and why they should be cherished. His *Wild Animals I Have Known* was published in 1898 and has remained in print ever since. His *Art Anatomy of Animals* (above) was a tour de force of scientifically accurate drawings. I can testify from my own experience that Seton had a special appeal for zoologically inclined boys, but his works were also familiar to many of his mature contemporaries, including such notables as John Burroughs, Andrew Carnegie, Havelock Ellis, Henry Ford, Rudyard Kipling, Theodore Roosevelt, Leo Tolstoy and Mark Twain.

He became a keen observer of animals, whose ways, he said, were more congenial than those of humans.

Much simplified, the message Seton delivered for 60 years was: Nature is a Very Good Thing, in and of itself, and contemplation of it is an uplifting tonic for the human psyche. Over the course of his lifetime, no one did more than Seton to promote this idea, which these days is widely accepted as indisputably true.

He was born in England near Newcastle upon Tyne, the eighth of Alice and Joseph Thompson's ten sons. His father seems to have been a Victorian caricature, choleric and a bit muddled. After mismanaging an inherited shipping business to the verge of bankruptcy, he emigrated to Canada with his family in 1866. He eventually found employment in Toronto as an ordinary bookkeeper. Despite those reduced circumstances, Thompson expected, according to his eighth son, to be treated at home "like the Pope, or a Roman emperor."

In his autobiography, Ernest wrote that he suffered from various physical ailments and bouts of mental depression; he felt slighted by teachers and was often bullied by boys; he was overworked and under-praised by his family. Among other incidents, he recalled in vivid detail that when he was 9 years old he had been unjustly spanked for a minor domestic misdemeanor. Ernest retreated sobbing to his room and there fantasized that he was lying on his deathbed. Family members gathered round, begging to atone for the many wrongs they had done him. Bravely, the forgiving lad whispered his last wish—that his tombstone be inscribed with the word "Misunderstood." Then he imagined that he died.

Most cruelly, he averred, he was misunderstood by his father who, among other things, punished him often and harshly without good cause; did not respect his opinions; exploited his labor; and kept him chronically short of pocket money. All in all, Joseph Thompson was, his son wrote, "the most selfish person I ever heard of or read of in history or in fiction." Consequently, when the boy was 17 he began calling himself Ernest Thompson Seton. This name, which he later legally adopted, was selected because of a family legend which had it that the Thompsons were direct descendants and the rightful heirs of one George Seton, a 17th-century Scottish earl.

Other family members recalled Joseph Thompson as being a no more than ordinarily, for those times, stern patriarch. After listening, when they were both middle-aged, to Ernest carry on about how he had been abused, an older brother, William, wrote in his memoirs: ". . . the poor boy actually believed that father had so treated him, for he shed real tears in the recollection! But . . . everyone of the family knows that father thought more highly of Ernest than he did of any of his family of ten boys. . . ."

Wretched as his boyhood may or may not have been, Seton seems to have had a lot of free time to roam the woods and wetlands around Toronto. He became a keen observer of animals, whose ways, he said, were far more congenial and interesting than those of humans. Seton, boy and man, was often suspicious of the motives of other people and disingenuous about his own. He could be arrogant, manipulative and exploitative, but throughout his life he was a genuine nature lover.

Seton's artistic gifts were recognized and encouraged early on. At 16, he became an apprentice to a Toronto portrait artist and soon enrolled as a night student at the Ontario School of Art. Three years later, he sailed for London, where he was awarded a seven-year scholarship to the Royal Academy of Arts. Seton did not much like the Royal Academy or England. He stuck it out at the school for less than a year before returning to Toronto. By then, an older brother, Arthur Thompson, had begun working a homestead in western Manitoba near the present town of Carberry. Finding nothing more attractive to do, Ernest joined him there.

P. 111: BROWN BROTHERS

This part of Manitoba is a marvelous place for a nature lover. Just to the south, along the Assiniboine River, there is a belt of small sloughs, open prairie glades and ridges of glacially created sand hills, thinly covered with white spruce, aspen and bur oaks. To the north, there are biggish lakes and the heavily forested Riding and Duck mountains. Leaving most of the farmwork to Arthur, Seton explored this country, carrying a rifle, skimpy rations, sketchbooks and notepads. He joyously trailed moose, deer and coyotes; watched and sketched courting prairie chickens, waterfowl, foxes and badgers; found, as no other ornithologist previously had, the nest of a Philadelphia vireo; collected eggs and skins. Perhaps most importantly, careerwise, he had his first close encounters with wolves and Indians, for whom he was to develop an almost mystical reverence. Wolves, Seton came to believe, were the most clever and noble of animals; Indians were the best of people because they were the most attuned to and respectful of nature.

Manitoba was the wildest place Seton regularly lived in for any extended period of time. He used and reused experiences he had there during what he fondly remembered as his "golden years." In point of fact, there were not quite three of them.

Even before he went to Carberry, Seton had made up his mind to earn "a comfortable fortune by my pen and pencil." He knew he could not achieve such a goal as a prairie homesteader, so in the early part of 1885 he left the farm for good and headed east. He was to return occasionally as a visitor, but for most of the rest of his long life he would be a resident of metropolitan areas in the United States.

Seton had a talent for meeting the right people. Shuttling between Toronto, New York and Washington, he developed a useful network. Among others, it included the Western artist Frederic Remington; Elliott Coues, the cofounder of the American Ornithologists' Union; C. Hart Merriam, the first chief of the U.S. Biological Survey; and Spencer Baird, Secretary of the Smithsonian Institution.

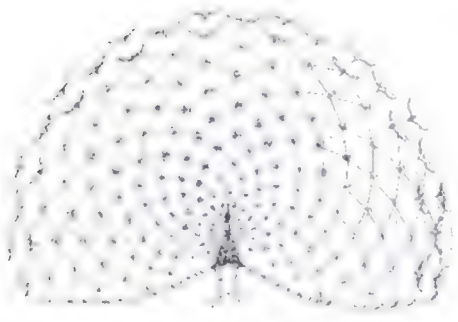
Soon Seton's animal stories and illustrations were appearing in *Century*, *St. Nicholas* and *Scribner's* magazines. Coues and Merriam commissioned him to do wildlife drawings and

Seton enjoyed a lifelong fascination with outdoor skills and Indian ways. A Pueblo leader presided at the naming of his adopted daughter, Beulah—now called Dee—in New Mexico (top) while his second wife, Julia, held the child. Members of his Woodcraft League were suitably garbed (center), and wee Dee wore feathers while beating a drum (bottom, left). Seton's first wife, Grace (bottom, right), displayed a rifle before heading off to Brazil.

reports for their organizations. The *Century Dictionary* purchased 1,000 of his sketches to illustrate its second edition. Baird asked him to become a "correspondent in natural history" for the Smithsonian, and the Institution later published Seton's monograph on the birds of Manitoba.

He spent four exciting months in New Mexico learning to rope and ride like a cowboy.

Though established as a rising freelance writer and illustrator, Seton decided in 1890 to go back to Europe as an art student, this time to Paris. He did not like that city much better than he had London a decade earlier, but he made more of an impression on its artistic community, mainly because of two paintings of wolves. The first, of a sleeping wolf, was accepted by judges of a Grand Salon competition as a nice bit of realistic work. The second was an imaginative recreation of an incident that had recently exercised Parisians—the killing of a shepherd by a pack of wolves in the Pyrenees. The gory, mural-size painting gave the impression that the artist thought the animals had committed a natural and therefore justifiable act. The Grand Salon indignantly rejected the work as being too gruesome in detail and outrageous in concept.



Seton's drawing of a peacock train is remarkable for its detail and elegant geometry. Seton began his celebrated career as an illustrator of wildlife, not as a writer.

Feeling much misunderstood, Seton returned to the United States. Among the passengers on the homeward voyage was Virginia Fitz-Randolph, "a tall fine looking girl" with whom Seton had struck up a platonic friendship in Paris. She was the daughter of a New York financier, Louis Fitz-Randolph, who gave a lavish homecoming party for Virginia at his New Jersey estate. Seton attended and made a good impression on Fitz-Randolph, who owned a ranch in the Currumpa valley near Clayton, New Mexico. There, according to the ranch managers, wolves were killing a lot of cattle. Having been told that Seton was a wolf expert, Fitz-Randolph suggested he spend some time on the ranch exterminating them. Despite his often-expressed affection for the animals, Seton had no qualms about doing so; at that time, collecting skins, skulls and bones was considered obligatory for serious students of nature. He spent four exciting months in New Mexico learning to rope and ride like a cowboy and kill coyotes and wolves. At first he used poisoned baits, but after a ranch hand fatally mistook a jar of his strychnine for quinine, he employed only a gun or traps.

The most notorious wolf was a reportedly huge, preternaturally crafty one named Lobo who, despite a $1,000 bounty, had for years, it was said, defiantly killed at least one cow or sheep each night. Fresh from New York and Paris, Seton set off, Ahab-like, in pursuit of this great gray wolf. Eventually he trapped and killed Lobo's mate, the beautiful and blondish Blanca. Her body was taken to the ranch. Lobo followed—mourning, Seton supposed, for his "silly young wife"—and was himself trapped. But Seton had grown to so greatly admire the noble animal that when he came upon Lobo in the trap, he said to a cowboy companion, "Stay, we will not kill him." Instead the two men wrapped the wolf in ropes and lashed him securely to a packsaddle. According to Seton: "As soon as he felt his jaws

In this fire-starting demonstration at his Connecticut estate, Seton wore the woodsy leggings that were a conspicuous part of his Black Wolf persona. His anatomical study of a greyhound (opposite) impressed the French painter Jean-Léon Gérôme.

were tied he made no further resistance and uttered no sound, but looked calmly at us and seemed to say, 'Well you have got me at last, do as you please with me.' And from that time he took no more notice of us."

The men returned to the ranch with their prisoner and chained him to a post. Then, reported Seton, "I set meat and water beside him, but he paid no heed. He lay calmly on his breast, and gazed with those steadfast yellow eyes away past me down through the gateway of the cañon, over the open plains. . . . When the sun went down he was still gazing fixedly across the prairie. . . . A lion shorn of his strength, an eagle robbed of his freedom, or a dove bereft of his mate, all die, it is said, of a broken heart; and who will aver that this grim bandit could bear the three-fold brunt, heart-whole. This only I know, that when the morning dawned, he was lying there still in his position of calm repose, but his spirit was gone—the old king-wolf was dead."

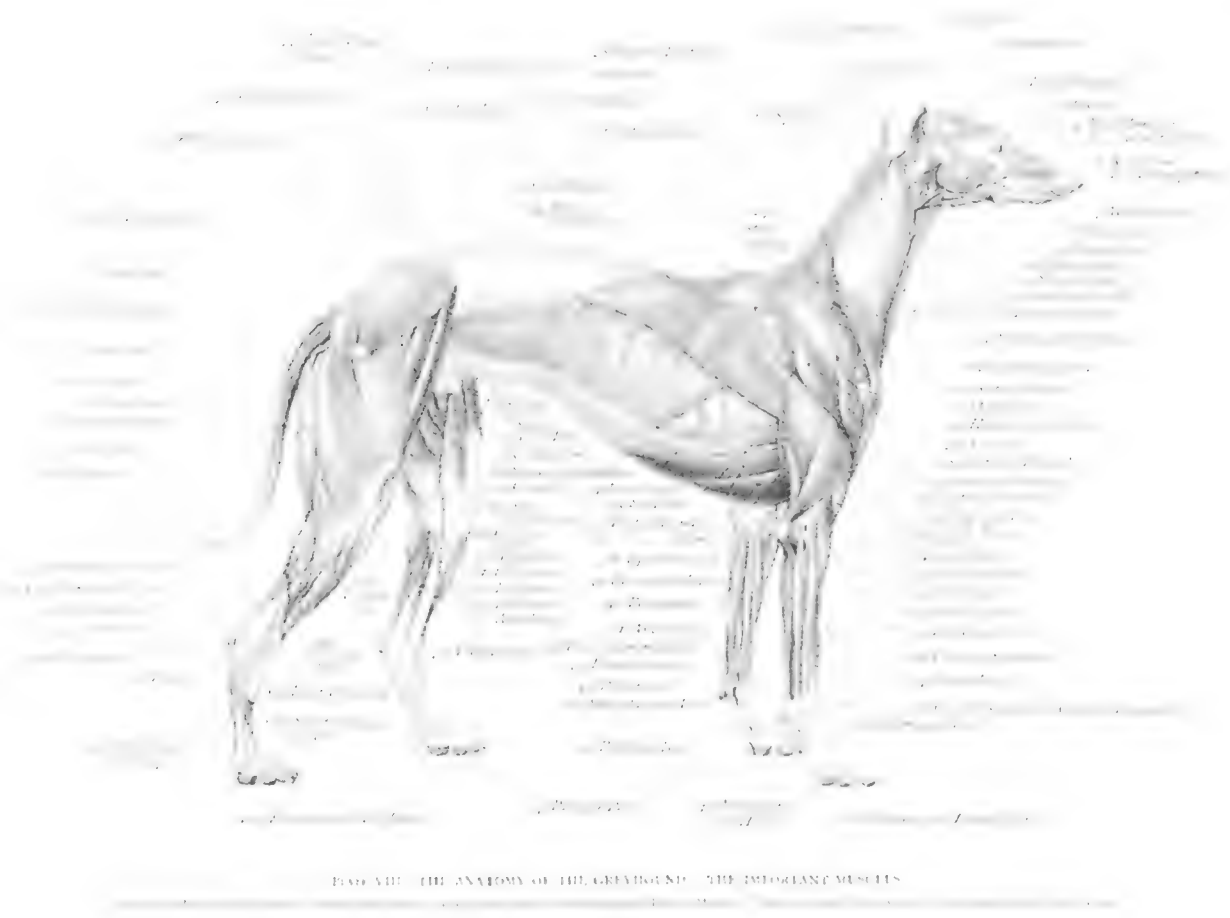
Seton was profoundly affected by that incident. Eventually, he began using the facsimile of a wolf paw print as part of his signature and referring to himself as Black Wolf.

Upon returning to the East, Seton wrote about this incident in "Lobo, the King of Currumpaw," published first in *Scribner's* magazine and then as the first chapter of *Wild Animals I Have Known*. The eight illustrated stories in this book each have to do with a different individual bird or mammal and represent what amounted to a new literary genre—zoological romances, thrillers and, most often, tragedies. In them Seton combined the techniques of a naturalist, to describe the actual habits of animals, and a novelist, to create suspenseful narratives based on their ambitions, thoughts and feelings. Typically, "Lobo, the King of Currumpaw" provides a good bit of accurate information about wolves, but it is also, in essence, a retelling of the Robin Hood story. Lobo is the gallant outlaw; Blanca is the winsome Maid Marian; and Seton is the Sheriff of Nottingham.

The protagonist of another Seton story was a smart old crow, Silverspot—so called because of white feathers on the side of his head. Silverspot lived, it was written, for some 20 years—an extraordinary but not impossible age for a crow—in the wooded environs of Toronto. There, according to Seton, he was the undisputed leader of a successful flock of crows. They were "as well drilled as soldiers—very much better than some." Silverspot was not only the "oldest and wisest of the band, but also the strongest and bravest . . . ready at any time with sheer force to put down an upstart or a rebel. The rank and file are the youngsters and the crows without special gifts."

Seton said he made this sketch of a lion to show the mane and both ruffs "at full development."

In light of more recent ornithological studies, Seton seems to have overstated the extent to which crows are organized into autocratic and paternalistic hierarchies. However, many of his general observations about their foraging, reproductive and communicative behavior are still sound and interesting. But the narrative of the story is driven by the adventures of Silverspot, how he astutely instructed his followers and how he frustrated human gunners, marauding great horned owls and other potential evildoers.



One winter morning while naturalizing in these woods, Seton came upon "the bloody remains of a crow and the great double-toed track which . . . told me that the murderer was the owl. All around were signs of the struggle, but the fell destroyer was too strong. The poor crow had been dragged from his perch at night, when the darkness had put him at a hopeless disadvantage. I turned over the remains—then started with an exclamation of sorrow. Alas! It was the head of old Silverspot. His long life of usefulness to his tribe was over—slain at last by the owl that he had

taught so many hundreds of young crows to beware of." I remember crying for Silverspot when I first read of him more than 60 years ago, and I've heard of others who did the same.

Detractors said Seton should have entitled his book "Wild Animals Only I Have Known."

Almost overnight, *Wild Animals I Have Known* made Seton a celebrity. At a dinner in New York, Mark Twain presented him with an engraved self-portrait jokingly inscribed to "Ernest Thompson Seton: with best regards of the tamed animal." Leo Tolstoy recommended the Lobo tale as the best wolf story he'd ever read. Rudyard Kipling is said to have acknowledged the extent to which Seton's work influenced his own. Theodore Roosevelt's children named two pet chickens Lobo and Blanca. Their father and Seton yarned about being dudes in the Wild West.

An angry bear snarls in a sketch that appeared in a 1900 edition of *The Biography of a Grizzly*.

Despite Seton's popularity, or perhaps because of it, there were detractors who snickered that he might have more descriptively titled his book "Wild Animals Only I Have Known." In an *Atlantic Monthly* essay, Seton was politely but firmly branded a nature faker by none other than John Burroughs, the successor to Henry Thoreau as a revered natural philosopher.

Like most intellectuals of the time, Burroughs believed animals were driven by long-fixed instincts. By nature, they could not reason, learn or communicate. Therefore, Burroughs thought accounts of heartbroken wolves, wild horses who committed suicide rather than be captured, flocks of crows organized and commanded like military units, were absurd inventions designed to sell magazines and books to the uninformed. "Mr. Thompson Seton says . . . that his stories are true, and it is this emphatic assertion that makes the judicious grieve," Burroughs wrote. Seton was furious at once again being so misunderstood, but at the first opportunity—a New York dinner given by Andrew Carnegie for 50 prominent writers—he sought to ingratiate himself with Burroughs, who later conceded that Seton's "way of loving nature is not mine, but doubtless just as genuine."

To demonstrate that he was a legitimate naturalist, Seton began to devote considerable time to less popular but more scientifically correct works. The most important of them was *The Lives of Game Animals*, a four-volume study of North American wildlife species that was based on his own observations and the formally cited ones of other zoologists. Much to Seton's satisfaction, in 1927 the work received the John Burroughs Medal, the most prestigious award given by natural historians for writing in this field.

During one of his periodic intervals in Paris, Seton met the attractive and sophisticated daughter of Albert J. Gallatin, the California steel and fuel magnate. After enjoying the bohemian pleasures of Paris together, he and Grace Gallatin were married in New York in 1896. Several years later, Seton built a "Tudor-Indian" style lodge on 120 acres of abandoned farmland—which included a lake, stream and bit of marsh—near Cos Cob, Connecticut. He named the property Wyndygoul, after the Setons' purported ancestral home in Scotland. It became a gathering place for a smart set of New York writers, artists and natural historians.

Wyndygoul also attracted some hostile local youths who began breaking down fences and shooting Seton's livestock. Rather than calling the police, Seton invited some 40 of the delinquents to spend a weekend camping out with him on the estate. At first, the boys were encouraged to holler as loudly as they wanted, run around in the woods and skinny-dip in the lake. After they calmed down, Seton taught them how to identify plants and birds, read trail signs, make bows and arrows, start fires without matches and other woodcrafty things. At night around a campfire, he told them Indian stories and suggested they organize themselves into a tribe. He agreed to serve them in a consulting capacity as Black Wolf, the medicine man. All of that made a great hit with the boys, but Seton was even more excited than they were.

Enlisting the aid of prominent associates, including Burroughs and Roosevelt, he began promoting and organizing other groups patterned after the one he had convened at Wyndygoul. Soon there were some 200,000 of Seton's "Indians" in the United States, and their guru was Black Wolf. Seton wrote that in creating the so-called Woodcraft League he was guided by the conviction that the best way to protect children's natural goodness was to inculcate them with a love of plants and animals. Also, they should be encouraged to emulate Indians, who were wise in the ways of nature and democratic, cooperative and communal in lifestyle.

In 1906, on a lecture tour in England, Seton met Inspector General of the Cavalry Robert Baden-Powell who, after returning from the Boer War as a national hero, was also starting a youth group, the Boy Scouts. Over a lunch with Seton, Baden-Powell said he was very impressed with the Woodcraft League and suggested they cooperate to benefit the boys of their respective countries. Black Wolf agreed that they should do so.

The Boy Scouts of America (BSA) was incorporated in 1910. Seton was Chief Scout and author of the first BSA handbook, which had more to do with woodcrafts than civil or military crafts. Disputes between Black Wolf and the other

chiefs of scouting began almost immediately and were exacerbated by the approach of World War I. Seton declared that scoutmasters were turning into drill sergeants and the Scout motto, "Be prepared," was being corrupted to mean "Be prepared for war." Other Scout leaders retorted that Seton was a muddleheaded pacifist, pantheist, socialist or worse. In a public huff, Seton resigned from the BSA in 1915.

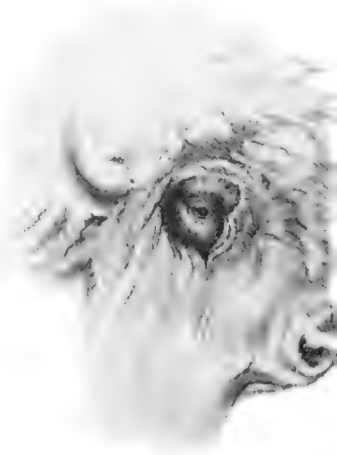
Not long after the birth in 1904 of the Setons' only child, Ann—who, as "Anya," became a popular novelist—the couple's marriage began to disintegrate. Grace established herself as a travel writer and became a leading activist in feminist causes. She and Seton pursued separate lives but didn't get around to divorcing until 1935. The day after the decree was granted, Seton, at 75, married Julia Moss Buttree, his longtime editorial assistant, business manager and traveling companion. When they first met, at one of his lectures in 1918, Seton had rakishly introduced himself to the 29-year-old Julia by saying, "Hello. We can have a lot of fun together." Apparently they did.

In 1930, Ernest and Julia purchased a property near Santa Fe, New Mexico. There they built an adobe castle—which ultimately had 45 rooms—and a complex of campsites and cottages called Seton Village. The "village" was used by the staff and students of what was first called the Seton College of Indian Wisdom and then the Seton Institute of Indian Lore. Seton was the main lecturer. Julia was the dean and a sometime instructor, cook and chauffeur. The college lasted for about ten years, but Seton Castle is now a national historic landmark. It is occupied by Dee Seton—whom the Setons adopted as a daughter in 1938—and her husband, Dale Barber.

Seton continued to write and lecture, but his audiences grew smaller. By 1946, at the age of 86, he had begun making plans to travel throughout the United States and Canada on a book-promotion and lecture tour that he hoped would revive interest in his work. Before he could do so, he died.

Seton does not currently enjoy great critical acclaim as a preeminent artist, writer, or natural or social scientist, but he did much to create a climate of opinion in which the intelligence, emotional complexities and individual personalities of animals are considered legitimate subjects of serious scientific inquiry and popular interest. Though often outrageously anthropomorphic and romantic, his stories promoted speculation that other species were not simply organic machines, inflexibly programmed by evolution.

The remarkable extent to which we have become a nation of nature lovers is one of the more thought-provoking phenomena of the 20th century. There is no way of knowing how responsible Ernest Thompson Seton is for this, but a plausible epitaph for him might be: "He was understood."



Seton's illustration of a bison highlighted the "divergent" hair patterns around the eyes.

Naturalist Bil Gilbert, a longtime contributor, recently spent some time exploring Seton's old haunts in western Manitoba.

Seton's northern shrike shows his deft touch with watercolor. His dramatic oil painting of a wolf pack chasing a sleigh (right) was rejected for a Grand Salon competition, as was a gruesome picture of wolves attacking a shepherd.

Bix

The story of a young man and his horn

BY FRED TURNER ◆ FOR MORE THAN 80 YEARS, THE QUAD Cities Symphony Orchestra has been the musical pride and joy of a bustling area in the upper Midwest that includes Davenport and Bettendorf in eastern Iowa and, directly across the Mississippi River, Rock Island and Moline in Illinois. Its repertoire ranges from classical to pop, but one night last fall the orchestra achieved a singular milestone when it played the world premiere of a symphonic jazz work by the well-known composer Lalo Schifrin called "Rhapsody for Bix." The piece is based on songs written or popularized by the legendary cornetist Bix Beiderbecke, who grew up in Davenport, where the Quad Cities Symphony is headquartered.

Bix was 18 when he sat for his portrait (opposite) in the summer of 1921. Four years later (above), he was relaxed but totally absorbed while recording his composition "Davenport Blues" with a band that included Tommy Dorsey on the trombone.

Bix Beiderbecke taught himself to play the cornet when he was in his teens and died in 1931 at the age of 28. During his brief career, he became one of the true sensations of the Jazz Age, unforgettable to anyone who ever heard him. But over time, as jazz evolved and tastes changed, Bix faded into relative obscurity.

Nearly two decades ago, I was playing some recordings one afternoon for the avant-garde reeds player Archie Shepp. I asked Shepp if he'd ever heard Bix. He hadn't, so I put on the Frankie Trumbauer orchestra's 1927 rendition of "Riverboat Shuffle," which features Bix at his astonishing best. When it was over, Shepp took a puff on his pipe and nodded slowly. "For what he was doing, Bix was *bad*," he allowed, using one of the jazz musician's highest forms of praise.

Shepp had it right. Bix was bad. And now he's back. This month, the 26th annual Bix Beiderbecke Memorial Jazz Festival will draw its customarily

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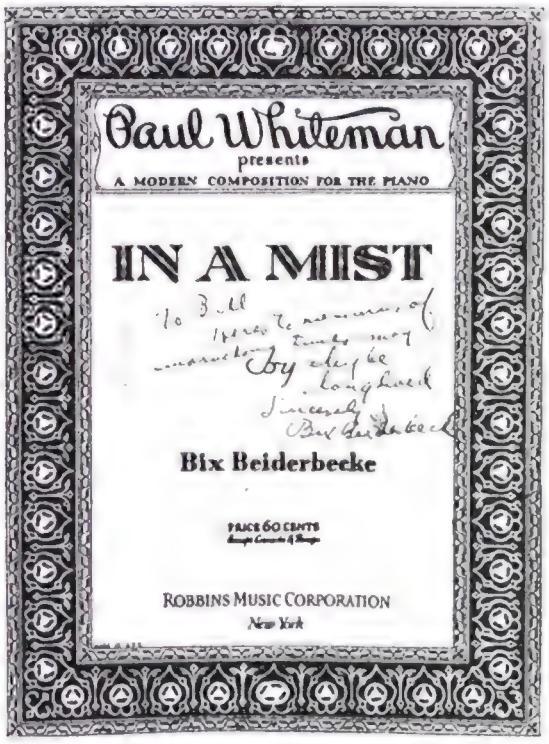

Here was a handsome young man who never grew old, whose frenetic pace matched that of the new music he helped create.

When the Wolverines (above) played at New York's Cinderella Ballroom, Bix, far right, was the main attraction. He inscribed the cover of his "In a Mist" sheet music (left) for arranger Bill Challis.

enthusiastic crowds of 15,000 or so aficionados to Davenport for four days of celebration. Last year, more than nine bands from around the world played Bix's music and, concurrently, an international field of 20,000 runners competed in a race called the Bix-7. There were tours of places associated with Bix, and everywhere bumper stickers and lapel pins proclaimed: "Bix Lives!"

Bix is a vital presence at other festivals around the country, too, most notably in Ketchum, Idaho, and Libertyville, Illinois. The originals of his recordings are highly prized by collectors these days, and he is well represented in CD format. A dozen Bix albums are currently listed in the *Penguin Guide to Jazz on Compact Disc*. Every fan has his or her favorites. Mine include his early recording of "Jazz Me Blues," "I'm Coming, Virginia" and that crisp, clean solo on "Riverboat Shuffle."

The qualities that strike the modern listener are the same ones that awed Bix's contemporaries: the round, shimmering tone; the deliberateness of the attack that still manages somehow to flow; the haunting sense of an artist reaching for something he couldn't quite articulate. Jazz critic Chip Deffaa likened Bix's sound to the experience of stepping into a bracing mountain stream. "The best of his solos," he wrote, "seem absolutely perfect: one cannot conceive of them being improved upon." The composer Hoagy Carmichael, who met Bix at the very outset of his career and saw him only days before his death, said he hit his

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notes like a mallet hitting a chime. Guitarist Eddie Condon thought Bix's horn sounded like a girl saying yes. Louis Armstrong jammed with Beiderbecke after hours in Chicago in the 1920s and revered him ever after. "I was thrilled to death with whatever Bix did," he told one interviewer. "He knocked me out. He had such beautiful tone, those beautiful phrases, fingers fast. Yeah, he was my man."

Another part of Bix's enduring appeal derives from the way he lived. Here was a handsome young man who never grew old, whose frenetic pace matched that of the new music he helped create. He was famous for his devotion to his horn and for his obliviousness to almost everything else. He played a good game of tennis and was passable at bowling. He loved baseball and boxing, and his protégé, the cornetist and amateur boxer Jimmy McPartland, said he could handle himself well in a brawl. Once, McPartland remembered, the two of them were leaving a club in the wee hours when one of a trio of street thugs tried to grab McPartland's horn. "I set it down," McPartland said, "and—bang—he was gone. And then—bang—the second guy was gone. Bix took care of the third. He could really hit." Women found his reticence, gentlemanly deportment and wistful smile tremendously attractive. Perhaps they wanted to save him.

And he did need saving. The history of early jazz is pickled in booze, and a telling number of its pioneering exponents ran afoul of it. But nobody drank like Bix. His benders became legendary, yet still the beautifully constructed solos poured out of him, compelling admiration and surprising even Bix, who seemed to his colleagues to have no idea of how remarkable his work really was—or how he did it.

Leon Bix Beiderbecke was born to upper-middle-class parents at a time

A visit to the Bronx Zoo in New York gave Bix, center, and pals in the Jean Goldkette Orchestra a chance to "charm" a snake.

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when Davenport was still a predominantly German town. His paternal grandfather had emigrated from Germany in the 1850s and was a bank president. His father, Bismark, was an executive in a lumber and coal company. Musical ability ran in the family, but it was music firmly within the European tradition. Grandfather Carl led a choral group that performed at Lutheran services. Bix's mother, Agatha, was an accomplished pianist, and his sister, Mary Louise, remembered Bix being able to pick out pieces like "Pop! Goes the Weasel" when he was barely able to reach the keyboard.

When he was 7, the local paper recognized him as a prodigy: "Little Bickie Beiderbecke plays any selection he hears!" His mother planned to get him formal instruction, the paper went on, because she feared that otherwise he'd "never fancy playing by note." Prophetic fear. Mary Louise recalled that rather than learn to read the pieces his piano teacher gave him, Bix would simply listen to the teacher play them and then play them back, but "with 'improvements.'" The teacher gave up in disgust, and that was the end of music lessons for Bix.

But it wasn't the end of the boy's noodling on the piano or of his consuming interest in music, especially the popular forms his family deplored. This music was all around him. It came through the summer air from the riverboats docked at the levee on the Mississippi to the Beiderbecke home on Grand Avenue, and Bix escaped down there whenever he could to hear that music with his friends. Once he stowed away on a riverboat and volunteered his services as a calliope player to the captain, who promptly sent him home. His whereabouts became a

In a classic family grouping, baby Bix sat between Burnie (left) and Mary Louise.

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constant source of concern to Bismark and Agatha. A friend remembered going to the silent movies with Bix, who didn't care about the films. "He just wanted to hear the guy who played piano accompaniment," the friend said. "As soon as the show was over, he'd hurry back to his grandma's to play on her piano what he'd just heard."

Early in 1919, Bix's older brother Burnie, just back from the Army and flush with pay, bought a windup Graphophone and some records. Thus, the despised music of the "jazzers" invaded the Beiderbecke household in the form of the Original Dixieland Jazz Band's versions of "Tiger Rag" and "Skeleton Jangle." It wasn't authentic New Orleans jazz, a music with strong folk roots in the black community, but a shrewd commercialization of it by five whites led by cornetist Nick LaRocca. "They were really a corny outfit," said clarinetist Mezz Mezzrow, who played with Bix in the mid-1920s. "But they were fast and energetic, and they had a gang of novelty effects that the public went wild about."

The novelty stuff didn't interest Bix, but LaRocca's work did. Shortly, he borrowed a battered cornet from a friend, and then, sitting before the Graphophone, he listened to LaRocca's parts again and again at slow speed, trying to work out the fingering on his horn. So began the making of one of the most idiosyncratic players in jazz history. The traits others noted in his few years of fame—his unorthodox fingering; his picking out a spot on the floor in front of him and playing to it—these began by the Graphophone on Grand Avenue. As for the purity of tone he eventually developed and the shapely structure of his solos, who can say where those began?

Outwardly, Bix fit in well in Davenport. He'd grown into a handsome young man, and even though he was not talkative, he was popular at school. When he chose, he could be very witty in a dry, offbeat way. Around the house he was respectful of his parents, but his obsession with music was setting him apart. He'd begun sitting in with local bands, despite his inability to sight-read. He had no interest in formal education, and when the high school informed the Beiderbeckes that he would not be promoted to the twelfth grade, they packed him off to the Lake Forest Academy, a prep school north of Chicago.

The parental strategy failed. What Bix learned at the academy was how many great bands there were in Chicago. He didn't last the year, getting bounced when he was discovered climbing down the fire escape one

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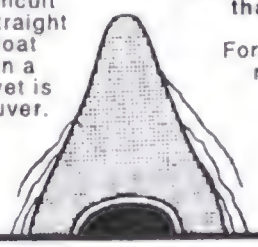

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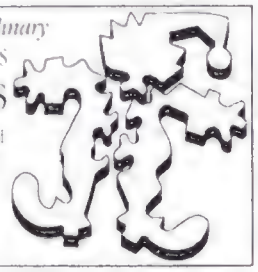

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night with his cornet wrapped in newspaper. That was the end of schooling, and after a brief period when Bismark put him to work at the coal-and-lumber company, the young man and his horn headed straight into the unquiet heart of the Jazz Age.

Even before Bix left Lake Forest, bandleaders and fellow musicians realized he was special. In just three years, the boy from Davenport had somehow developed a distinctive, polished style that owed almost nothing to his predecessors. His sound was so clearly his own, so clearly new, that it amazed everyone who heard it. The young Benny Goodman wondered, "My God, what planet, what galaxy, did this guy come from?"

The kids who'd seized on jazz and dancing in a way comparable to the phenomenon of the rock revolution of the 1960s heard that newness in his playing and took him to their hearts in unprecedented fashion. When he sat in with Jimmie Caldwell's Jazz Jesters at a Chicago high school dance early in 1922, Caldwell hid him behind the piano because Bix didn't have a tuxedo. But, said Caldwell, soon the "kids started screaming for him so much that we had to move him down front. Every time he took a solo, they'd go wild. It was eerie." A few weeks later, at a suburban girls school, the headmistress pulled Caldwell aside during an intermission and ordered him to silence Bix. "That nice boy of yours is exciting my girls!" she exclaimed. It was the same when he appeared on college campuses with an aggregation that eventually became known as the Wolverine Orchestra.

In part, it was Bix's youthful appearance and careless manner that endeared him to the younger generation. After hours, when fans took him partying, they found he liked the things they liked, especially Prohibition alcohol, which he could consume in enormous quantities. With the aid of booze, said Eddie Condon, "he drove away all other things—food, sleep, women,

Don Murray, Bix and Howdy Quicksell found time to horse around backstage between gigs for Goldkette.

ambition, vanity, desire. He played the piano and the cornet, that was all."

And how he could play. Single-handedly, he lifted the Wolverines from amateur status to a popularity that spread all the way to Broadway. When they opened at the Cinderella Ballroom, there were almost as many musicians in the crowd as dancers. Violinist Hal Duffy remembered hearing the Wolverines, "and Bix's notes fell *all over* Broadway . . . great notes!" Among those on whom the great notes fell were bandleaders Jean Goldkette, who was based in Detroit, and Paul Whiteman from New York. The former made Bix an offer, and he accepted.

In the summer of 1926, Goldkette sent a band including Bix, clarinetist Pee Wee Russell and saxophonist Frankie Trumbauer to Hudson Lake, Indiana, to play a club called the Blue Lantern. In their definitive biography *Bix: Man & Legend* (Schirmer Books), authors Richard M. Sudhalter and Philip R. Evans, with William Dean-Myatt, vividly re-create the atmosphere. It became a beautiful, bibulous summer for the musicians, playing nights for dancers at the barn-like club that hung out over the lake, then jamming and drinking until dawn. Days,

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He liked Prohibition alcohol, which he could consume in enormous quantities.

the men spent recovering and lazing about the shore. Hygiene was at best casual, and the cottage Bix shared with other band members was littered with liquor bottles, half-empty cans of sardines and bottles of sour milk. The cottage also contained an old piano Bix often played, working out modern chord structures that seemed odd to some of the more straightforward jazzmen who heard them.

When the full Goldkette band went East on tour that fall, it played a Boston suburb where teenage trumpeter Max Kaminsky went out to hear Bix. His tone, Kaminsky recalled, "was so pure, so devoid of any tinge of sentimentality or personal ego, that it was the nearest thing to perfect beauty I have ever heard." When the awestruck youngster got up the nerve to introduce himself to his idol at a break, he discovered that Bix was as shy as he and kept nodding his head while staring at his cracked patent-leather shoes.

In New York, the white players from the Midwest found themselves pitted at the Roseland Ballroom against one of the very hottest of the black bands, the Fletcher Henderson group, which included trumpeters Rex Stewart and Joe Smith and reedmen Coleman Hawkins and Buster Bailey. On opening night, Fats Waller sat in on a few numbers.

Henderson's men felt confident they'd blow the white boys out of the room. But they reckoned without Bix and Trumbauer and the band's arranger, Bill Challis. At the end of the night, the Henderson men conceded they'd been "cut." "We simply could not compete," Rex Stewart admitted.

Less than a year later, the Goldkette band was on the financial rocks. Paul Whiteman, the 300-pound impresario, knew Bix and Trumbauer could brilliantly set off his huge orchestra with carefully spotted solos. He wanted the best in the business, he told them, and he was willing to pay for it.

Although Whiteman was known as the "King of Jazz," his group was a symphonic orchestra that bridged the gap between light classical numbers like George Gershwin's "Rhapsody in Blue" (one of its staples) and music for dancing. It was filled with first-rate musicians, some—like the Dorsey brothers and Bing Crosby—headed for individual stardom. To be asked to join it represented the supreme achievement in the field, and an excited Bix called home to tell Bismark and Agatha he'd hit the very top. Their reaction was decidedly cool, quite the opposite of the acclaim he now enjoyed.

When young people swarmed around Bix after a concert, he greeted them all with unfailing kindness. With his bashful smile, he'd invariably ask, "Well, how's everything down there?" And then, leaving, "Well, I'll see you down there!" "Chances are," said Whiteman, "he never knew where 'down there' was, but he just wanted to be nice to everybody." "He was a kindred spirit," said violinist Matty Malneck, and after hours his young admirers would spirit him away to some place where there was a piano and drums and liquor, and Bix would stay there until morning, playing and drinking. When Malneck roomed with him, Bix was taking a slug of gin before getting out of bed.

Whiteman kicked off his 1928 fall tour with a concert at Carnegie Hall that featured Bix playing his own piano composition, "In a Mist." Then they were off: Virginia, the Carolinas, Georgia, Alabama, Tennessee. Sudhalter and Evans note that in New Orleans, Bix's old hero LaRocca paid him a visit backstage. On into Texas; when the nation elected Hoover President, the band was in Wichita Falls. Five days later, in Tulsa, Bix stumbled aboard what he thought was the train to Ponca City only to discover it was

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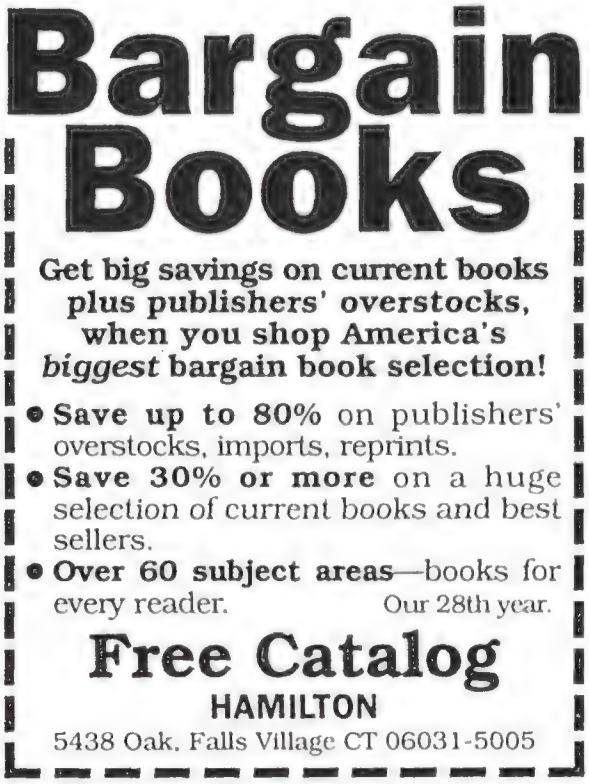
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not. At the next stop he got out, hunted up a pilot, and the two of them flew—and drank—to Ponca City. He made it to the afternoon performance but slept through the evening concert.

Kansas, Missouri, Nebraska, South Dakota. When the band was in Clinton, Iowa, Bix's brother was the only family member who made the 30-mile trip from Davenport. Minnesota, Illinois, Indiana, Michigan, Ohio. A Thanksgiving concert in Charleston, West Virginia, back to Ohio and then Toronto, Buffalo and Boston. By early December, they were back in New York.

A few days later, Bix was hospitalized with pneumonia. After he rejoined the band, he had an attack of delirium tremens and tore up his hotel room. Eventually, Whiteman sent him to Davenport to recuperate. Convalescing there at the house on Grand Avenue, Bix found in an upstairs closet all the recordings he'd proudly sent his parents, still unopened.

Once again, Bix rejoined the band but drank more recklessly than ever. His famously sunny disposition darkened under the relentless deluge of alcohol, and it was harder now for friends to make contact with the Bix everybody loved. Up on the bandstand, he began passing out upright, his horn on his knee. "Wake up Bix," reads a notation on a Whiteman score from this time, a reminder to a section mate to get Bix ready for a solo.

Nobody could believe Bix was finished; after all, he was such a young man. He alone seemed to sense the truth of his condition. According to Sudhalter and Evans, while convalescing again back in Davenport, he confided his fears to his high school sweetheart. "It was almost as though he longed to be just a young boy again," said Vera Cox Korn, "riding his bike no hands down the hill near our house to show off for me. . . . Now here he was back from New York, with a funny little mustache, and looking kind of fat and not at all healthy. He kept on saying he felt he'd reached the top and there was no other height to reach, therefore the only direction was down, and that he was afraid sometimes."

In the spring of 1930, Bix began a fitful period of freelancing and resumed late-night jamming and boozing. Soon he was drinking straight alcohol flavored with lemon drops, and one day when he stood up for a solo on a radio broadcast his mind went blank and he couldn't play a note.

He made one last attempt at a comeback, at life itself, playing some New England college dates, but the other players found him undependable. His behavior was somber and erratic; his health was failing. One night in New York he talked trombonist Jack Teagarden into going down to the morgue to look at the corpses. At Amherst College, he played in a group that included the hot new trumpet star Bunny Berigan. He was afraid to solo, but the kids kept hollering for him, just as they had a lifetime ago in Chicago; and for that night, anyway, he gave them the old Bix, running through numbers like "At the Jazz Band Ball" that had made him their darling.

No one saw much of him in the summer of 1931. Health problems lingered. He'd moved out of Manhattan to a small apartment in Queens and had taken up with a girl. He hardly ever left his room except to buy gin. Other tenants complained about his late-night piano playing, but they never heard the cornet. Then one night Bix suffered another attack of delirium tremens, this one fatal, and so, for the final time, he was put on a train for home.

Down at the Davenport depot, two morticians met the train and conveyed the casket to the funeral parlor. When they raised the lid, Kenny Shields, a 19-year-old apprentice, was shocked to find inside a young man laid out in a tuxedo and bow tie. "Who is he?" Shields asked the other mortician. "Oh," he was told, "he's just some drunken musician from New York City."

But that wasn't the end of Bix. Players and fans told stories about him,

Left: a poster created by Beiderbecke fans commemorates Bix's 1927 B-flat cornet, now owned by a Davenport museum. Above: Bix's friend Hoagy Carmichael, left, appeared with Kirk Douglas in the 1950 movie *Young Man With a Horn*, loosely based on the cornetist's life.

and McPartland, Red Nichols and Bobby Hackett preserved something of his sound in their playing. During Benny Goodman's epochal 1938 concert at Carnegie Hall, Hackett cast a reverential hush over the black-tie audience when he played, note for note, Bix's solo on "I'm Coming, Virginia." Around that same time, Dorothy Baker wrote her popular novel *Young Man With a Horn*, based loosely on Bix's life; the 1950 movie of the same title starred Kirk Douglas. Bix was the subject of a steady stream of critical assessments, a full-scale biography, a film documentary and a 1990 feature film by the Italian director Pupi Avati. Today at least one new biography, by Philip Evans, is in the works and a recording of "Rhapsody for Bix" is being planned.

Last fall, a few weeks after the premiere of "Rhapsody," I made a pilgrimage to Bix's home territory, beginning with a drive from Chicago to Hudson Lake, where Bix played the Blue Lantern. I was astonished to discover that the club is still standing, hard by the railroad tracks of the South Shore Line. It now serves its longtime owner, Jack Weber, as a boathouse and storage shed. When he escorted me inside the building, Weber gestured toward the front. "That's what you want to see," he said. And there in the gloom of that decaying old structure was the original bandstand. The hair on the back of my neck stood up as I stared at the little set with its painted backdrop of a moon shining on lake waters, its splintered flooring, its little step that had felt the weight of the young players 70 years earlier.

In Davenport, I was taken to various Bix sites by Jim Arpy and Rich Johnson, both longtime officers of the Bix Beiderbecke Memorial Society. Founded in 1971, the organization has more than 700 members and sponsors the annual jazz festival.

The old Beiderbecke place on Grand Avenue, a big two-story house with a roomy front porch and a turret in one corner, looks just as it did when Bix was a boy. When we stood in the living room, Johnson said, "I don't think Bix's parents ever understood how great Bix really was. I'm not sure they even wanted to. When [jazz historian] Marshall Stearns came out here to talk with them years after Bix's death, they said something like, 'We never knew our Bix was famous.'" He shook his head in wonderment. Next to us, the ghostly outline of the family piano was still visible on the floor, and as Johnson spoke I was visualizing little Bickie standing on tiptoe there to pick out "Pop! Goes the Weasel."

With a population of 95,000, Davenport is much bigger than it was when Bix grew up there, but it wasn't difficult for me to put together a picture of the town he knew, with the main streets running down to the great river, the hill where the prosperous German families like the Beiderbeckes built their substantial homes and, beyond the town, miles on miles of cornfields. The levee where the boats and their bands once docked has been shored up and paved, and there is a bust of Bix and a plaque there where they hold the main events of the festival. The high school Bix attended still stands. So do some of the places where he played, though many have new names now.

Finally, Arpy and Johnson took me out to Oakdale cemetery, where Bix lies surrounded by his family. The Beiderbecke marker is as conventional as they come, and there is absolutely nothing to indicate that "Leon Bix" had been anything other than a solid son and citizen. Before I left Davenport, I went back there. Parking on the road near the plot, I found "Royal Garden Blues" on one of my Bix tapes and turned it up loud so I could hear it while I stood in front of his grave. Here was Bix at the height of his fame and in the fullness of his singular genius.

Looking at the family marker under the big oaks and listening to Bix's horn light up the gray afternoon, I was seized with a sense that in the end the artist has had the last word. After his parents' disapproval, after the brief fame, after the ghastly death and all the posthumous adulation, here is the beautiful sound he made and left behind. His solo on "Royal Garden Blues" sticks close to the melody, as always. But with improvements.

Fred Turner is the author of Remembering Song (Da Capo), *a history of New Orleans jazz. He resides in New Mexico.*

Andrew Wyeth: A Secret Life

Richard Meryman

HarperCollins, $35

Andrew Wyeth, arguably America's best-known living artist, is at once our most popular and most denigrated painter. For a half-century, his spare and luminous evocations of rural Pennsylvania and coastal Maine have attracted an enormous public following, even as art establishment critics have routinely condemned his work as reactionary and out of step with contemporary trends.

The widely divergent views of Wyeth, combined with his complicated persona and reclusive ways, make him a challenging subject. Fortunately, Richard Meryman brings special strengths to this first comprehensive examination of the artist's life.

The son of a painter—his father was principal of the Corcoran Gallery of Art school when Richard was born in Washington, D.C. 70 years ago—Meryman was a top writer for the original *Life* magazine before becoming a freelance writer in 1972. He and Wyeth hit it off when he profiled the painter for *Life* in 1964, and Wyeth subsequently chose Meryman to be his biographer.

Accepted into the Wyeth family inner circle, Meryman over three decades accumulated a large trove of astoundingly candid comments from the artist's redoubtable wife and two sons, his gifted siblings, and numerous friends, neighbors and models. Having absorbed Wyeth's deepest feelings and ideas, and the memories, anxieties and passions that have animated his life and art, the author has succeeded in creating an intimate and vivid portrait of an artist at work.

Raised in a lively household where imagination and creativity were encouraged, Wyeth was deeply influenced by his domineering father, N.C. Wyeth, the great illustrator. A sickly child tutored at home, Andrew was unusually close to his talented, driven father who, says Meryman, became "his role model," although he "swore never to be like him." N.C.'s tragic death at age 63, when a train hit his stalled car at a crossing, stimulated greater seriousness in his son's art and has haunted him ever since.

Central to Andrew Wyeth's saga are two larger-than-life figures: his father, whom he worshiped and feared, and his wife, Betsy, a formidable woman indeed. The fascinating cast of characters also includes a number of individuals familiar to those who know Wyeth's work: the indomitable, crippled Maine woman, Christina Olson, heroine of *Christina's World*; the artist's close friend, alcoholic Maine fisherman Walt Anderson; and his Pennsylvania neighbors, the brooding German-born farmer Karl Kuerner and his wife, Anna, who would grow increasingly deranged over the years. "I'm *involved* with the people I paint. They become my friends," Wyeth says of those who pose for him. "They're not people I paint and send home."

Meryman devotes much attention to the depictions of Helga Testorf, the German-refugee neighbor in Chadds Ford, Pennsylvania, whom Wyeth painted secretly for 15 years before creating a sensation when he unveiled the series to his wife and the public.

Meryman explores the secrecy surrounding the series, the complicity of family members who kept Betsy in the dark, the reason the pictures were finally revealed, Betsy's ambivalent reactions, and Wyeth's disappointment at the barrage of bad reviews that greeted the series at the National Gallery of Art in 1987. Critics not only questioned the quality of his work but

In *Braids*, painted in 1979, Wyeth created an arresting study of his model, Helga Testorf.

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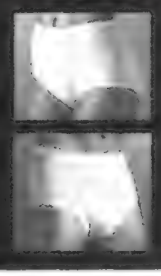

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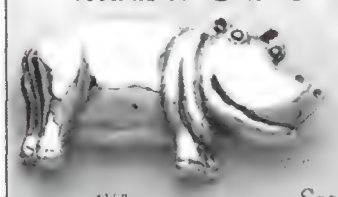

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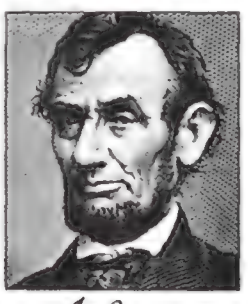

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speculated about whether he and his model had had an affair, and whether the artist's wife was really unaware of what was going on.

Meryman's comprehensive examination of the circumstances surrounding the Helga suite is convincingly credible, making it plain that those who said "the whole event was a hoax concocted by Andrew and Betsy to boost sales" were wrong.

In truth, Wyeth deserves better. As Meryman points out, Betsy had displayed great jealousy toward a young woman whom Wyeth painted before he began the Helga series. His wife had even issued an edict: if ever he produced a similar sequence, she ordered, "don't tell me." In an interesting coda, we learn that Helga has been accepted by Betsy, and helps take care of the somewhat frail, infirm painter, who turns 80 this month.

No one who reads this sympathetic but probing biography will ever look at Wyeth's seemingly serene pictures the same way again. Descriptions of the context and significance of major works are bound to enhance appreciation for paintings that include such masterpieces as *Christina's World* (1948), *Karl* (1948), *The Patriot* (1964), *Alvaro and Christina* (1968), *Barracoon* (1976), and *Night Shadow* (1979).

The book could use more color plates and an index, but these quibbles aside, this is as rich and nuanced a treatment of the elusive Andrew Wyeth as we will ever see.

Whether or not Meryman's biography stills the art-world chorus that slavishly condemns the work of this American master, nothing is likely to diminish Andrew Wyeth's appeal as a best-selling, much-beloved artist and as a record-breaking museum exhibition subject. This exemplary portrait of a remarkable person—and painter—deserves careful reading by his vast public, admirers and detractors alike.

Stephen May writes about art and culture from Washington, D.C. and Maine.

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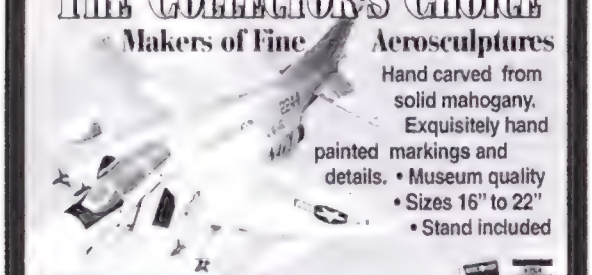

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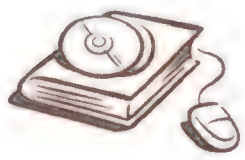

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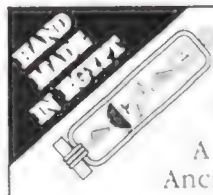

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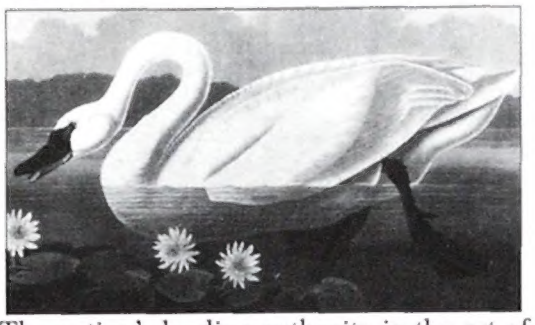

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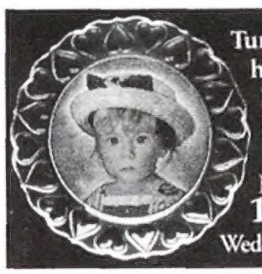

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Fire Deportment

BY RICHARD CONNIFF

ONE WINTER EVENING LONG AGO, my mom's oven gave out an oily *whoosh* and started spitting flames. As clouds of burnt Crisco roiled upward, my sister Cindy responded in the time-honored manner of hopping on one foot while flapping her arms and crying, "*Eeek!* Shall we get out? *Eeek!* Shall we get out?" This is the sort of thing we did in my family. We were short on common sense, but our grammar was impeccable.

My mom sprinkled salt on the fire, which had no effect whatsoever. Then my dad came to the rescue lugging a big copper fire extinguisher. "Stand clear!" he shouted. He hesitated a moment to read the directions and then turned the extinguisher upside down. It promptly shot foam in his face. As the loose end of the hose went writhing around the kitchen, it sprayed every wall and counter while my father anointed our ears with obscenities. The fire got doused, along with everything else. We surveyed the damage silently until Cindy spoke up: "*Eeek* . . . you've ruined the dinner! *Eeek* . . ."

I was not thinking about this distant episode the other night when we were all visiting at my parents' house and I asked Cindy's firstborn son, Matt, to go out and make a fire in the barbecue. Matt is 18 and a National Merit Scholar. He is an avid student of linguistics. Someday he will doubtless be the enfant terrible of the Modern Language Association. But even by my family's standards, he is devoid of common sense.

Matt made the fire in one of those metal cylinders you use to ignite charcoal with crumpled-up newspapers. Then he came back inside and tried to engage us in a conversation about literal versus figurative speech. I said, "Matt, maybe you should go dump out the charcoal now." So Matt went out in the yard, and the other children, Cindy's and mine, followed.

The flames licked up toward the siding of the house. Anna began to hop on one foot and ululate.

Matt studied the cylinder of burning charcoal. "Why do you think he wants me to dump it?" he asked the others, who all shrugged innocently. Then Matt took the cylinder by the handle, carried it to an out-of-the-way spot next to the house and dumped the charcoal on the grass, which immediately caught fire. The flames licked up toward the siding of the house.

Anna, Cindy's second-born, began to hop on one foot and ululate. Matt, with unusual presence of mind, snatched a can of soda out of her hand and emptied it onto the burning grass. The fire fizzled out. "Would that you had a brain," said Anna, a high school Latin student who has gotten in the habit of wandering around muttering, "O *tempora!*, O *mores!*" and employing the "would that" construction at every opportunity. "How did you think he was going to cook dinner on a pile of charcoal in the grass?" she said. "You'd better put it in the grill."

"Oh," said Matt, the light dawning. "Dump it *in* the grill." He walked to the garage, got a shovel and scooped up the burning charcoal. Then he saw the circle of scorched earth in the lawn. "Oh, my God," he said. "Grandpa's going to eviscerate us."

"Get dead grass," a sensible voice in the crowd (it must have been a neighbor's child) suggested, and children scattered in all directions tearing up clumps of dry grass and flinging them onto the burnt patch. Meanwhile, Matt carried the hot coals to the grill. But instead of putting them *into* the grill, he put them into the ash pan *under* the grill. Then he looked at what he'd done and thought about it just long enough for Anna to sigh and roll her eyes. "Oh," said Matt. "In the *grill!*"

It was at about this point that I decided to check on Matt's progress. The scene, when I opened the back door, was of Matt on his knees before a blazing fire in the ash pan, from which he was extracting red-hot coals one at a time with the barbecue tongs, while savage little children scurried around in all directions whooping and clutching dead grass in their hands.

"*Eeek!*" I cried, in the time-honored manner, arms already flapping. It is the sort of thing we do in my family.

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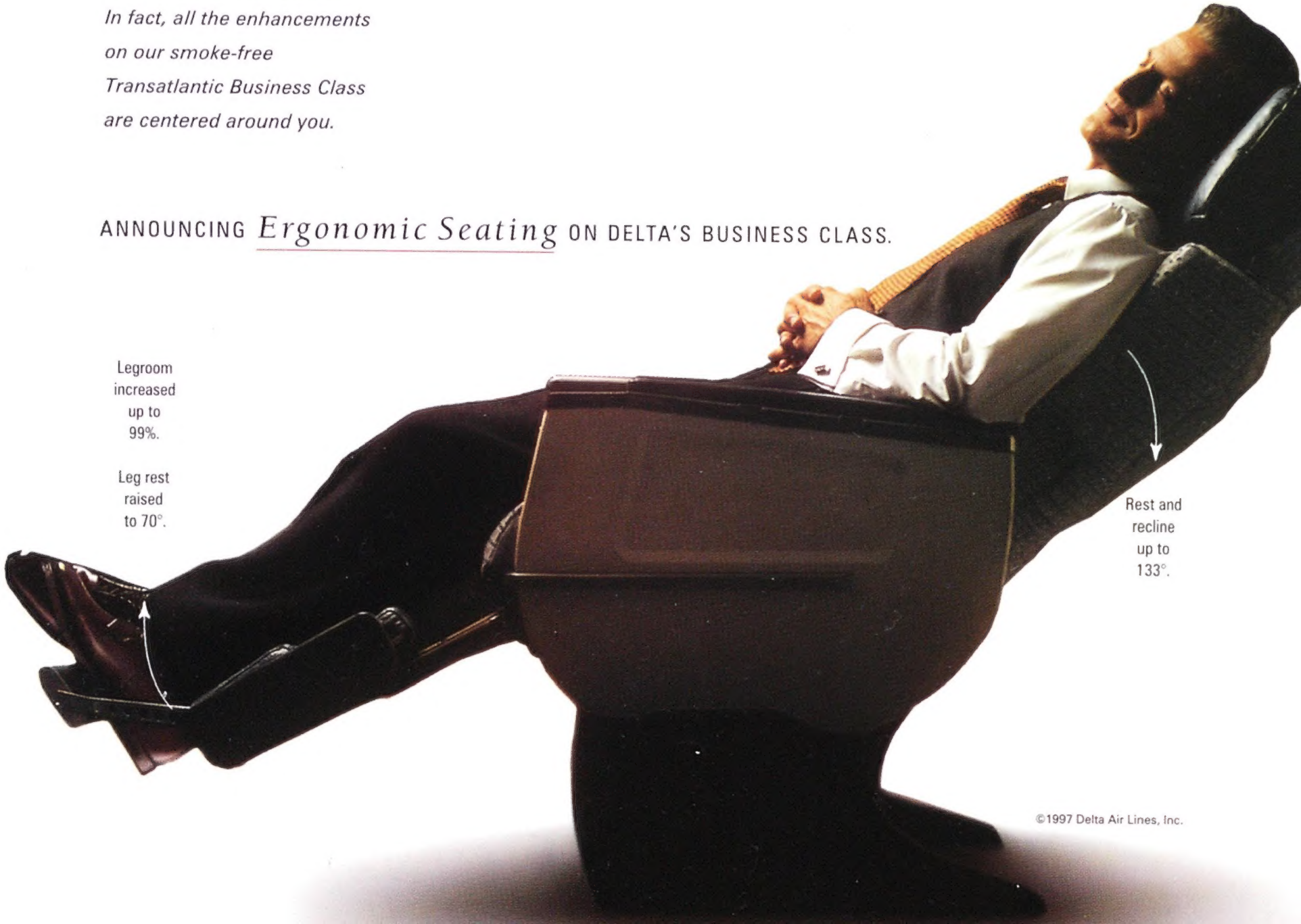

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